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ABSTRACT

The objective of this paper is to consider alternative frameworks for the description and analysis of linking agents' roles and functions and to explore the implications of the frameworks for linkage training and support. Section 1 draws attention to the variety of terms and contexts used in the literature on educational knowledge utilization and draws distinctions between three widely used terms: knowledge utilization, knowledge transfer, and planned change. In section 2, general orientations toward change are examined from a variety of perspectives. In section 3, seven widely quoted "systematic" models of change are reviewed in terms of their implications for linking agents, macrosystem linkages, linking roles, and temporary and permanent linking systems. In sections 4 and 5, recent conceptions of linkage and linking agents are examined and comparisions are drawn among the linking agent roles described in the literature. In section 6, directions for future development are suggested. The implications of previous conceptualizations and the suggested future directions for linking agent training and support are discussed in section 7. (Author/IRT)

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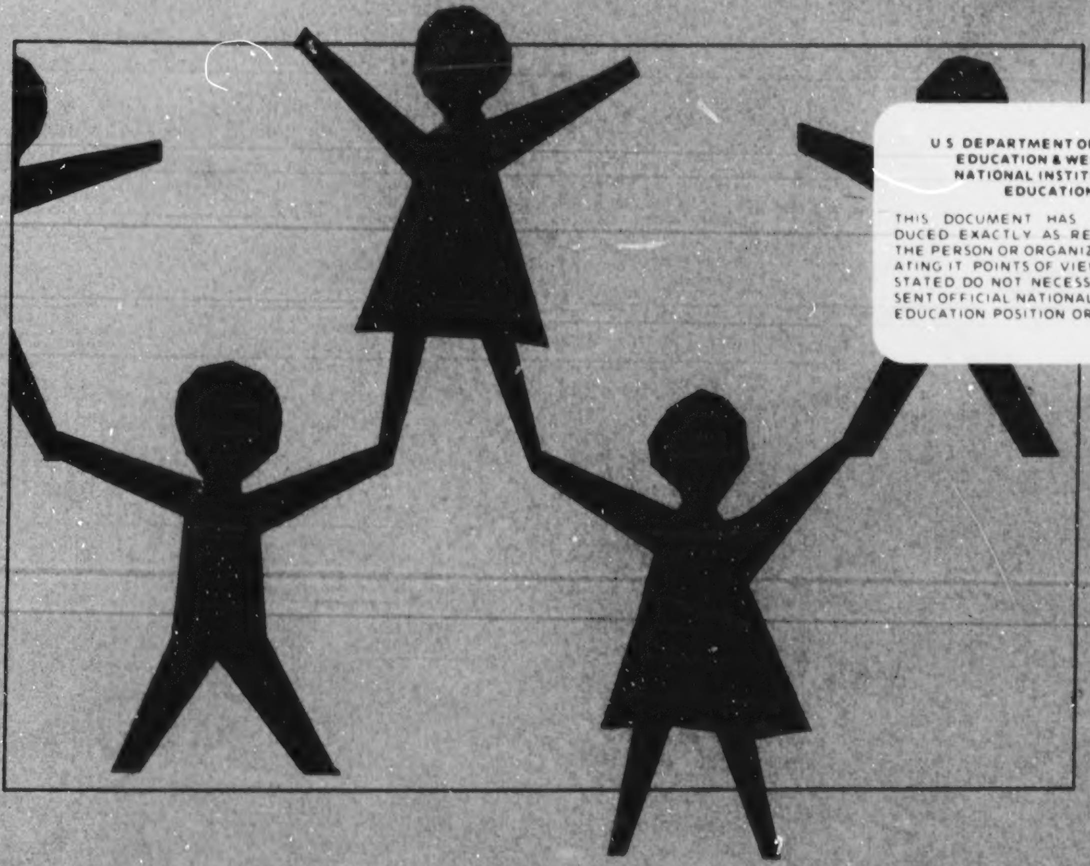
# Educational Knowledge Dissemination and Utilization

## OCCASIONAL PAPER SERIES

## Alternative Approaches to Analyzing Educational Dissemination and Linkage Roles and Functions

June 1978



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# ALTERNATIVE APPROACHES TO ANALYZING DISSEMINATION AND LINKAGE ROLES AND FUNCTIONS

Paul D. Hood

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June 1, 1978

FAR WEST LABORATORY
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# TABLE OF CONTENTS

LIST OF FIGURES AND TABLES........................ i

FOREWORD........................................ iii

PREFACE......................................... v

ABSTRACT........................................ vii

I. INTRODUCTION................................. 1

II. GENERAL ORIENTATION TO CHANGE............... 7

III. SYSTEMATIC CONCEPTUAL MODELS OF CHANGE..... 27

IV. RECENT CONCEPTIONS OF THE LINKAGE AGENT AND AGENCIES............................. 39

V. DEVELOPMENT OF RECENT CONCEPTIONS............ 51

VI. AN ALTERNATIVE APPROACH TO CONCEPTUAL DEVELOPMENT.................................. 73

VII. IMPLICATIONS FOR LINKER TRAINING AND SUPPORT SYSTEMS............................ 85

REFERENCES...................................... 96

# LIST OF FIGURES AND TABLES

FIGURE 1: Six Types of Change that are Defined by the Time Horizon and the Level of Society at which the Change Effort is Directed.......... 16

FIGURE 2: Three Modal Linking Roles and their Relationship with Selected Linking Functions....... 55

FIGURE 3: Complementary and Symmetrical Linking Agent Roles.......... 58

FIGURE 4: Comparison of Linking Agent Roles.......... 60

FIGURE 5: Multiple Contexts of Contacts between Linking Agents and Clients.......... 63

FIGURE 6: Some Factors Affecting Organizational Effectiveness.......... 65

FIGURE 7: Levels of Specificity in the Derivation of Educational Goals and Objectives.......... 68

FIGURE 8: Relationship of Roles, Functions, Tasks, and Activities.......... 77

TABLE 1: Comparisons of Three Linking Agent Roles According to Agent and Client Characteristics...... 43

# FOREWORD

This Occasional Paper Series is the result of a collaborative effort among the National Institute of Education, the Far West Laboratory for Educational Research and Development, and students and practitioners of educational dissemination. Each of the papers in the series will be related to the dissemination and utilization of educational information and will reflect the continuing interest and activities of both NIE and Far West Laboratory in this area of educational research and practice. In some instances, the paper will be prepared by Far West Laboratory research staff: in others, the Laboratory will commission papers by practitioners and scholars in the field. Many of the papers will provide the basis for, or will be the result of, a series of dissemination conferences involving educational dissemination sponsors, dissemination project managers and staff, and school practitioners and scholars concerned with educational improvement based on the results of educational research and development.

The major goal of the series is to define areas of agreement and disagreement within the research, development, and practice communities on those factors which are most important in supporting the process of educational improvement. Among the factors to be considered are activities of staff involved in dissemination, the organization and operation of dissemination programs, and the organization and operation of school systems. The papers also will examine basic aspects of dissemination such as the spread and exchange of information, the use of information in program planning, and the provision of training and consultation to help implement program improvements.

One of NIE's goals is to help construct support services for schools and school systems which are attempting to improve educational practice. The papers in this series are particularly related to two of the many Institute efforts directed toward this goal: the interpretation of research for practitioners and the training of linking agents.

The papers and the process used in their preparation are related to the NIE knowledge analysis and interpretation project which encourages the analysis, synthesis, and interpretation of research findings for application in educational practice. Although there is no consensus on how this process of analysis/synthesis/interpretation should be carried out, we assume that it is not solely an intellectual process but includes an emphasis on agreement among persons with different personal and organizational commitments.

In addition, we expect the papers to contribute to the conceptual base for the NIE Linkage Training Service, which is intended to collect, organize and convey information about linker training materials and human resources to those involved in linkage programs. We expect the consultation and training experience of the Linkage Training Service to keep the papers tied to reality, and we expect the ideas in the papers to help in describing and making sense of the experience of linking agents and agencies.

The papers are the continuation of an interpretation activity which began in June, 1975 with Dr. Philip Piele's review of the literature on linking functions and linker training. That review and the resulting discussions highlighted a number of problems in the available literature: (a) the important system variables which influence change and improvement in schools are not seen as related to the functions of linking agents; (b) there is little attention to the nature and quality of the information to be conveyed to practitioners; (c) linking tends to be equated with change and with adoption of innovations rather than with support to program improvement efforts; (d) the role of the school administrator in the linking process is often ignored; (e) the functions of information provision, technical assistance provision, and helping the school system build its capacity to assess and improve education are usually seen as separate and unintegrated roles; and, finally (f) there is relatively little research on the functions of the linking agent. Based on that review, it appeared that an understanding of the educational improvement process required attention to the impact of the school administrator and the school as an organization as well as to the role of the linking agent. Subsequent activities have attempted to take such a balanced perspective.

In 1977, the University Council for Education Administration published a set of papers entitled Linking Processes in Educational Improvement. That book drew upon research and experience to look more carefully at processes of educational improvement from the perspectives of the types of knowledge available, the functions of the linking agent, and the functions of the administrator. This series of papers is the result of a further effort to identify and understand the ways in which different organizations and people relate in the complex process of encouraging educational improvement.

The papers in the current Occasional Paper Series are expected to examine the most recent research and experience in order to arrive at a series of statements which can provide guidance for both managers and policy makers involved in educational dissemination. In conducting such examinations and making such statements, we are sensitive to competing needs: to simplify a very complex field, and to avoid simplification which is not a useful representation of reality. Although we do not expect these papers to provide a final statement on any of the issues addressed, we hope that they will move us a step closer to an understanding of the crucial and complex problems of supporting individuals and organizations in their efforts to improve educational practice.

Spencer A. Ward

Consumer Information Branch
School Practice and Service Division
Dissemination Resources Group

National Institute of Education

Washington, D.C.
June 1, 1978

# PREFACE

This report is one of several efforts to illuminate and broaden our understanding of both the present and potential nature of educational linking agents, their roles, functions, and training needs. The long range goal is to describe a larger model or pattern of linking functions which appears most crucial for improvement of dissemination programs. Among the efforts toward this goal will be consideration of the historical perspective of the context in which educational dissemination has evolved and the relationships among linking roles and functions which have developed from that context, provisions for developing definitions of relevant terminology, and a tentative framework for developing cost comparisons among the variety of roles and functions described.

Considered here are alternative conceptual frameworks for the description and analysis of educational linking agent roles and functions, and derivative implications for training and support. The paper deliberately builds on and attempts to coordinate previous concept papers commissioned by NIE and produced by Piele, Crandall, Culbertson, Lieberman, Lipham, and Paul. It also draws on an earlier FWL-commissioned paper prepared by Butler and Paisley.

The process of developing this report has included participation in several meetings with scholars and practitioners in the field as well as analysis of published documentation. Follow-up activities related to this paper and other papers in this series will include conferences and forums sponsored by Far West Laboratory for the purpose of discussion and critique of the reports and identification of additional aspects of educational dissemination which should receive special attention. We welcome and encourage comments and critiques from readers and especially solicit suggestions for the improvement of subsequent efforts.

Paul D. Hood
Carolyn S. Cates

Editors

## ABSTRACT

## ALTERNATIVE APPROACHES TO ANALYZING EDUCATIONAL DISSEMINATION AND LINKAGE ROLES AND FUNCTIONS

The objective of this paper is to consider alternative frameworks for the description and analysis of linking agent's roles and functions, and to explore the derivative implications of the frameworks for linkage training and support. Section I draws attention to the variety of terms and contexts used in the literature on educational knowledge utilization and draws distinctions among three widely used terms: knowledge utilization, knowledge transfer, and planned change. In Section II, general orientations toward change are examined from a variety of perspectives, such as who is looking at the change process, the social level at which the change effort is directed, and the perceived source of change impetus. In Section III, seven widely quoted "systematic" models of change are reviewed in terms of their implications for linking agents, macrosystem linkages, linking roles, temporary and permanent linking systems. The models reviewed are: RD&D, Social Interaction Diffusion, Problem Solving, Therapeutic-Intervention Theory, Planned Change, Action Research, and Linkage Process.

In Sections IV and V recent conceptions of linkage and linking agents are examined, and comparisons are drawn among the linking agent roles described by Havelock (1969, 1973), Piele (1975), Butler and Paisley (1978), and Crandall (1977). Also discussed is the problem common to the development of previous conceptions and descriptions: the lack of empirical research on the roles and functions of linking agents which has led to emphasis on the agent's idealized style of operation or mode of contact with the client rather than on the actual functions and activities performed.

In Section VI, directions for future developments are suggested: greater emphasis on understanding the influence of contextual factors on linking roles and functions, analysis of job-specific activities and roles performed by linking agents, comparative analysis of occupational roles and generic or modal roles.

The implications of previous conceptualizations and the suggested future directions for linking agent training and support are discussed in Section VII. Most previous conceptions have been based on *a priori* assumptions about linking agent roles, functions, and training and support needs with little actual day-to-day observation of linking agents or in-depth inquiry into the conditions of their work and real problems and needs. Consequently, most training programs and support systems have been based on logical analysis and general assumptions about what would or should be needed, often with only a very general understanding of actual task demands and critical problems linking agents would encounter. If effective training and support systems are to be developed and maintained, there must be much more field-based, reality-oriented, intensive study of linking agents, their clients, and the embryonic linking agencies and systems that now exist.

# ALTERNATIVE APPROACHES TO ANALYZING EDUCATIONAL DISSEMINATION AND LINKAGE ROLES AND FUNCTIONS

## I. INTRODUCTION

The general literature on change and innovation has been aptly reviewed by Rogers (1962), Bennis, Benne, and Chin (1969), Miles (1964), Watson (1967a, 1967b), and Rogers and Shoemaker (1971). More recently, Glaser et al. (1976) have provided a highly effective distillation of this literature. In the field of education, Havelock (1969) has provided a definitive synthesis which may be augmented by bibliographies (e.g., Maguire, 1970; Shelton and Hansel, 1970; Rogers, Williams, and West, 1977) and by specialized reviews and analyses (e.g., Eidell and Kitchel, 1968, in educational administration; Short, 1973, in curriculum; Gross, Giacquinta, and Bernstein, 1971, in implementation of organizational innovations; Zaltman, Florio, and Sikorski, 1977, in planning and management of educational change efforts). The reader is referred especially to Glaser (1976) for a comprehensive overview and to Havelock (1969) for a more intensive examination of the now extensive literature pertaining to educational change, dissemination, and knowledge utilization.

This paper deals more specifically with a much narrower aspect of this vast literature, namely with alternative conceptualizations of the knowledge utilization and change processes in education and their derivative implications for educational linking agents. In the diffusion/change literature cited above, there is ample evidence that new ideas and practices are spread most efficiently and are used with greatest effect when their dissemination and utilization is facilitated by a person, or team of persons, functioning as a linking agent who conveys knowledge from more distant sources toward ultimate users. Conceptually, anyone who facilitates the transfer of educational knowledge could be considered a linking agent, but this simplification leads to a rather unacceptable situation, since virtually anyone in the field of education may be involved in the transfer of knowledge to someone else. Typically, the concepts of linkage and linking agents have been more restricted. But if every communication process in education is not part of the linkage process, and if everyone in education is not a linking agent, what are the major alternative conceptualizations and what do they offer those concerned with educational practice improvement?

Because the literature on educational knowledge utilization and planned change is so vast and multifaceted, it is sometimes difficult to sort it in terms of the language and ideas encountered in different contexts. It may be helpful to note first that knowledge utilization (or more precisely, knowledge production and utilization--KPU) is a larger concept that subsumes knowledge transfer and planned change. As a field of study, knowledge utilization is concerned with examining the processes of knowledge development, dissemination, and implementation; with identifying the factors that account for the character and timing of production, diffusion, and utilization processes; and with developing strategies and tactics to foster appropriate, timely, and effective utilization.

Knowledge transfer is sometimes used as a completely synonymous term with knowledge utilization, but in other usages is confined to the communication/dissemination/diffusion phases of the KPU process (thus excluding the production and sometimes the incorporation and adoption phases of the utilization process). Knowledge may be used for many purposes that may or may not be associated with planned change. But probably the larger part of educational knowledge consumption is associated only indirectly with planned change efforts.*

We consider planned change to be a specialized form of knowledge utilization (transfer) in which knowledge may be employed in a variety of ways to initiate, facilitate, or support changes in individuals, groups, or organizations that are planned by someone. It should be recalled that many types of change may not be planned by anyone; for instance, individual changes may be due to natural growth or development, socialization, or emulation of "models." Organizational changes may be forced by major technical, social, or cultural changes. (Note, however, that planned change may be a part of the process of accommodation to unplanned "environmental" changes.) By contrast, planned change involves some form of deliberate effort to modify the structure and pattern of individual or organizational behavior. Planned change efforts may range from short-term attempts to change the attitudes or behaviors of individuals through to very long-term efforts to change entire organizations or social institutions. Planned change efforts, by definition, involve _some_ degree of rationality, which, in turn, implies the use of knowledge.*

---

* Hood and Blackwell (1976) analyzed data based on field interviews with a purposively selected sample of 106 key persons representing 18 educational roles and located in more than 40 communities throughout the U.S. They found that these educational information users' purposes for seeking and using information fell into eight major groups: (1) maintaining work-related vigilance (e.g., keeping aware of who is working in specific subject or problem areas; identifying new sources of assistance for improving work in progress); (2) use of new materials, methods, or competencies; (3) evaluation and decision making about new products and practices; (4) policy making; (5) finding answers, supporting decisions, or developing alternatives; (6) scholarship (gaining theoretical information; acquiring ideas); (7) teaching and competence maintenance (e.g., brushing up on an old specialty; preparing or planning teaching/classroom materials); and (8) providing information to others. In a subsequent nationwide sampling survey of 1,328 persons representing 14 separate user audiences (including school practitioners, administrators, and higher education and governance groups), Hood, Mick, and Katter (1976) found that the need for information varies markedly by type of user and purpose for seeking information. However, over all groups, the purpose that shows the greatest need for information is keeping aware of developments and activities in education; the second most important need is for information bearing on specific answers to questions in relation to the respondents' work.

However, the fact that knowledge may be used in planned change must not be confused with other forms of knowledge utilization that are _not_ associated with planned change. Many important uses of knowledge in the field of education are only distantly associated or not at all associated with planned change. However, in this analysis we shall focus only on knowledge utilization that does involve aspects of planned change. Unless explicitly stated otherwise, when the term "change" is used in later discussions we are assuming that the reference is to knowledge utilization involving planned change.

Our purpose is to suggest a shift in the focus and scope of inquiry on roles and functions from a wide angle view on global or generic roles to a short- to mid-range view of the more narrow scope of particular occupational roles and functions. We have tried to organize our discussions of alternative conceptualizations to reflect such a shift by progressively narrowing the focus of each section of the paper. Thus, in Section II, general orientations toward change are examined from a variety of perspectives. Next, we review seven widely quoted "systematic" models of change and consider their implications for change agents. In Sections IV and V, we narrow the focus to recent conceptions of educational linkage and linking agents and the perspectives and development of those conceptions. In Section VI, we describe an alternative approach to development of linking agents' conceptions, and in Section VII, we consider some implications of the previous conceptions and the alternative suggested for linker training and support.

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* The concept of knowledge may also require further discrimination. Some writers identify _data_ as coded signals or signs, or the unprocessed stimuli that are "raw" data. _Information_ is data that has been subjected to some form of processing (e.g., recoding, summarization, collation.) _Intelligence_ consists of information that has been communicated to others, usually with an accompanying interpretation or evaluation of its meaning or pertinence. _Technology_ transforms information and produces _products_ or _processes_ that can still be regarded as information bearing. _Knowledge_ refers to the total body of data, information, intelligence, and technology, and their organizing structures and principles (i.e., the sum of all that is known).

Although we have not attempted to extend the implications to the construction of a particular conceptual model or models which might guide the recommended shift in focus, we suggest two aspects of the school improvement process that should be taken into account in constructing such models. First are the functions which must be carried out by the school staff in the improvement process and the support needed by staff in the performance of those functions. Second are the interactions between the school functions and the linker functions in the improvement process. Lipham (1977, pp. 118-148) has described educational functions and support in terms of the administrator's role. Culbertson (1977, pp. 275-316) has built on that description and others to describe some of the educational sub-system functions related to educational improvement (teaching-learning, management leadership, policy-making) and to suggest their relationship to three general linker functions (improve education; span organizational boundaries; acquire and use knowledge-based ideas, products, and services in improvement activities). Descriptions such as these provide a useful starting point for developing a framework which accounts for both school functions and linker functions in the improvement process.

Two notes about the emphasis of the paper are important. First, although the emphasis of most of the literature on educational linkage is on the external linking agent and/or agencies, we have not differentiated between external and internal linkers in our own discussion and consider the discussion applicable to both. Similarly, we have made no distinction between full-time and parttime linkers. However, we believe that these distinctions should be explored in future efforts.

## II. GENERAL ORIENTATION TO CHANGE

The literature on educational change is by now so extensive that it is sometimes difficult to identify and analyze the perspectives and assumptions that underlie the various approaches. To gain a general orientation, we have found it useful to ask the following questions:

1. Who is looking at the change process?
2. At what social level(s) is the change effort targeted?
3. What is the perceived source of change impetus?
4. How do change sponsors or change agents view the change participants?
5. What dominant change strategies are employed or recommended?
6. What is the scope, style, and objective of the change attempted?
7. Who is attempting to accomplish the change and for what purpose?

Who is looking at the change process? It seems obvious that different observers, participants, or stakeholders in any educational change effort will hold different views of what the process is or what it should be. However, it seems more important that efforts to organize conceptions about change are often related to different purposes, understandings, assessments, predictions, or action options of different types of persons. There are differences associated with functional roles (e.g., policymaker, program manager, change agent, client), with organizational level (e.g., federal, state, intermediate, or local), with type of agency (e.g., legislative, administrative, operating school system, R&D firm, information service agency, institution of higher education, commercial firm), with type of client position (e.g., curriculum specialist, business manager, teacher, custodian, pupil, parent), with type of change observer (e.g., policy analyst, researcher, evaluator, manager), and with the observer's disciplinary orientation (e.g., educator, psychologist, sociologist, economist, information scientist). Role, organizational level and type, position, and disciplinary orientation all affect one's view of educational knowledge utilization and change in both the descriptive (what is) and the prescriptive (what should be) sense. Although this perspective seems obvious, the point is often overlooked. For the most part, our accessible knowledge about utilization and change resides in documentation--produced primarily by researchers, evaluators, or change practitioners. Generally, these persons write for their sponsors or their peers.

Many other change process stakeholders are participants or bystanders--witnesses to and sometimes informants on many alternative versions of what was, is, or could be. However, with some rare exceptions provided by an illuminating case study, diary entry, or interview excerpt, the perceptions, attitudes, and values of these stakeholders are often lost in the abstractions of particular disciplinary views of change models, strategies, tactics, etc.

Hence, "Who is looking at the change process?" is our first question because that person's identification may significantly influence responses to any remaining question.

At what social level is the change effort directed? Even a cursory review of the change literature leads to the impression that much of it is focused on the individual as the primary target of any communication or change effort. However, change may be aimed at many social levels, including the following:

- Individuals (e.g., teachers, school principals, counselors)
- Groups (e.g., departments, offices, teams)
- Intergroup structures (e.g., relations among departments, groups, or other organizational subunits)

- Organizations (e.g., school districts)
- Interorganizational structures (relations among relatively autonomous agencies; e.g., several school districts, local and state agencies)
- Communities
- Society

Historically, most educational change efforts have been concerned with individuals or small groups. However, one can find examples of efforts to accomplish change at other levels, such the school, the school district, or the community. It is important to know which level(s) may be perceived as the primary (and secondary) target. Many early change theorists and practitioners assumed that one could change other levels by changing individuals. It is now generally conceded that different strategies may be required for different levels. Many of the more recent change models emphasize the need to work at more than one level and to attend to the interplay between adjacent levels (e.g., the interaction among individuals within formal and informal networks of communication who are performing specified roles in particular organizations). However, even the multi-level approaches tend to differ in their relative emphasis on the role and importance of change at different levels (e.g., changing organizational structures versus changing intergroup communication processes versus changing individual values or behavior).

What is the perceived source of change impetus? The response to this question tends to reveal the general type of change model or strategies preferred and is usually related to the organizational levels selected as appropriate primary targets. Some change theorists and practitioners conceptualize change as originating primarily within individuals. They assume either explicitly or implicitly that if the values, belief systems, perceptions, or behavior of individuals are changed, then changes in the organization or larger society will follow. Another view is that since individuals are members of groups, the support, encouragement, social reward, or sanction of the group will be needed to initiate or maintain change efforts. Another variant on this view is to focus on special members of the group, such as leaders, influential or key persons, "gatekeepers," or resisters, in order to mobilize and direct individual and group change.

Another set of change theorists and practitioners tends to focus on the organization as the primary basis for change. They assume that if one works at changing organizational goals and purposes, structures, procedures, or incentives, then individual and group changes, first manifested in behavior and eventually in attitudes and beliefs, will follow. Others tend to place their greatest faith on the necessity for mobilizing sources of change external to the target organization. Their argument is that although some individual educators may want change, educational organizations themselves are so structurally resistant to fundamental changes that only external social, economic, or political forces (such as strong and organized community pressures, legislative mandates, financial incentives, or coercive measures) can be relied on to modify significantly more than a few change-prone individuals or agencies. Finally, others argue that there should be a systematic orchestration that seeks to take advantage of individual, organizational, and environmental forces and incentives for change. Because of these various positions as to the fundamental or strategic locus of change, we can identify (a) individual change models, (b) group change models, (c) organizational change models, (d) environmental change models, and (e) systematic models that span some or all of the first four models.

How do change sponsors or change agents view change participants? This question probes for views regarding the motivation, competency, and ability of clients to participate in diagnosis, prescription, and the change effort. When the individual is the target of change, we encounter the issues of how directive or nondirective the change agent should be, and the converse issues of how well the change agent can know what is best for the client. For instance, is the client viewed, at least initially, as a relatively incompetent, unmotivated, or powerless person who must be helped to gain understanding, skills, incentives, resources, or coping strategies, or is the client viewed as a highly sophisticated, motivated, resourceful, and powerful person who merely needs specialized knowledge, advice, or assistance?

As we ascend to higher social levels of change targets, differences among individuals, groups, and organizations in their goals, purposes, power positions, and expectations of gain and loss become significant issues. If change is to be accomplished, who must do the most changing, who stands to gain or lose, how is the status quo among stakeholders affected, how will conflicts be resolved, and what new problems will be created? How will the change agent relate to and be perceived by different parties? When conflicting values are at stake, what role does the change agent play (e.g., ally of one value position, honest but perhaps misguided negotiator, strictly nondirective helper, neutral participant, or some other role)?

Another type of response to this question about the character of the client anticipates the following question regarding change strategies. Guba (1967, 1968) noted that strategies are related to various assumptions the change agent makes about clients. Are they:

- Value-oriented clients, who can be helped to clarify or reassess their values and the relation of their values to performance and behavior?
- Rational clients, who can be convinced by presentation of evidence and logical arguments regarding self-interests?
- Untrained clients, who do not yet know how to perform but who can be taught necessary knowledge and skills?
- Psychological clients, who can be persuaded or conditioned?
- Economic clients, who can be compensated or deprived?
- Political clients, who can be influenced through conflict and compromise?
- Bureaucratic clients, who can be compelled?
- Professionally-oriented clients, who can be obligated?
- Or some combination of the above?

Obviously, there may be a "chicken-and-egg" question here in light of uncertainty as to whether change agents tend to view clients in certain ways and then select corresponding strategies, or whether they gravitate to preferred strategies and then view their clients accordingly. But there is no question that assumptions regarding the pertinent or effective sources of client motivation are related to selection of change strategies.

What dominant utilization or change strategies are employed or recommended? Responses to the previous questions will usually suggest at least the general types of strategies that will be preferred. As Guba's typology suggests, a wide variety of strategies may be identified according to one's assumptions about client motivation. Bennis (1966) reminds us that there are also a number of alternatives to "planned change," including: natural change, emulative change, socialization, indoctrination, and technological change, which may not be in any way "planned" or controlled by the client or the change agent. However, here we are primarily interested in planned change. Zaltman, Florio, and Sikorski (1977, pp. 73-82) provide a useful analysis of a number of change strategies. Their review of the change literature results in the identification of three basic types: power, manipulative, and rational.*

"Power strategies" involve the threat or use of rewards and punishments Guba's economic, political, and bureaucratic clients and Sieber's "powerless participant" are all vulnerable to the application of power strategies that may involve legal, financial, social, or organizational rewards, recognitions, sanctions, or deprivations. Power strategies involve arranging for the delivery or application of suitable rewards and punishments and communicating to clients their existence and the specific behaviors on which they are contingent. Zaltman, Florio, and Sikorski note that the success of a power strategy rests on the extent to which the sources of power are really valued or sufficiently compelling.

"Manipulative strategies" involve the deliberate arranging of communications and the environment so that clients come to perceive situations differently or behave in different ways. Unlike power strategies, manipulative strategies use motivators that are meaningfully (intrinsically) tied to the change itself. Guba's untrained and psychological clients are examples of client motivation types most closely related to this class of strategies. Zaltman's (1972) persuasive strategies, which involve manipulations of messages, rewards, or symbols to urge acceptance of change (e.g., through testimonials, advertising, or promotion), and facilitative strategies, which involve increasing the ease with which change can be implementated (e.g., through product development and delivery training, technical assistance, creating climates for change), are major subclasses of manipulative strategies. Obviously, the success of these strategies depends both on the change agent's knowledge of the client system and on the ability and skill of the agent to manipulate the environment to foster the intended change.

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* Zaltman, Florio, and Sikorski properly note that the distinction is artificial since educational change depends on fundamental processes and always involves rewards and/or punishments, communication, and some configuring of the environment.

"Rational strategies" are sometimes considered a special class of "manipulative" strategies, but are distinguished by their emphasis on inducing clients to perceive that change is in their own best interest and to participate actively and rationally in the change process. These strategies involve communication about the nature of change, emphasis on reasons why it is justified, and demonstration of how the client may proceed to undertake it. Guba's value-oriented and rational clients and Sieber's "rational man" are examples of clients for whom this type of strategy may be most potent. Problem-solving, action research, and linkage process models of change all draw primarily on this class of strategies.

What are the scope, style, and objectives of the change attempted? Regardless of the level of the target of change, general assumptions concerning the motivation of clients, and choice of type of strategies, there may be significant differences in the intended scope, style, and objectives of change.

Schmidtlein (1974) has suggested that there is a continuum of planned change orientations that ranges from the "comprehensive/prescriptive" approaches characterized by extensive planning, systems analysis, and tightly-controlled decision-making to the opposite end where "incremental/remedial" (I/R) approaches are found. Schmidtlein traces I/R approaches back to the classical notion of the marketplace and notes that Lindbloom's concepts of disjunctive incrementalism and management by "muddling through" have given academic dignity to the incremental/remedial. We interpret the Guba and Clark "configurational perspective" as another argument that pleads for a little more balance toward I/R approaches and movement away from "comprehensive/prescriptive" approaches, at least when inter-institutional change is contemplated.

Whether the change agent is disposed toward the comprehensive/prescriptive or the incremental/remedial end of this change orientation continuum will depend on many factors, but perhaps most importantly on the extent to which the change agent believes it is possible to understand, predict, and control the elements and forces in a dynamic change process.

We note that a second important and sometimes related orientation toward change is the "time horizon" which is assumed; is the change effort seen as a relatively short-term, one-shot "fix," as part of a somewhat longer-term and perhaps more complex activity that will be undertaken and completed in one year or a few years, or as a long-term process that may have no well-defined period or point of determination? I/R approaches can live within any of these time horizons, but comprehensive/prescriptive approaches will usually divide the longer time horizon efforts into relatively distinct phases that are measured in months or perhaps a year or two. Comprehensive/prescriptive change planners usually need to know rather precisely what they are attempting to accomplish, how they plan to get there, and at least roughly how long it will take. The I/R change approach may tolerate much greater ambiguity or uncertainty on all three counts.

The time horizon concept may also be usefully associated with the social levels at which the change effort is directed. Zaltman et al. (1972, p. 3) have reduced the societal levels of change identified previously to three: (a) individual, (b) group, and (c) society, and have crossed these three levels with two time horizons--short-term and long-term--to produce six "types" of change.

FIGURE 1

SIX TYPES OF CHANGE THAT ARE DEFINED BY THE TIME HORIZON AND THE LEVEL OF SOCIETY AT WHICH THE CHANGE EFFORT IS DIRECTED

| LEVEL OF SOCIETY<br>TIME HORIZON | MICRO (Individual) | INTERMEDIATE (Group) | MACRO (Society) |
|---|---|---|---|
| Short-Term | *Type 1*<br>1. Attitude Change<br>2. Behavior Change | *Type 3*<br>1. Normative Change<br>2. Administrative Change | *Type 5*<br>1. Invention/ Innovation<br>2. Revolution |
| Long-Term | *Type 2*<br>Life-Cycle Change | *Type 4*<br>Organizational Change | *Type 6*<br>Sociocultural Change |

Adapted from Zaltman et al., p. 3.

Pincus (1974, p. 117) has given us a somewhat different and perhaps more operational way of looking at scope-of-change by identifying five approaches which impact on different facets of school operations. These are:

1. Increasing the level of resource use (e.g., providing more classrooms or smaller class size);
2. Changing the resource mix (e.g., increased use of teacher aides, use of equipment versus people);
3. Changing the instructional process or methods without significantly changing the mix (e.g., a new curriculum in a subject area such as math, social studies, reading);
4. Affecting administrative management, without significant effects on organizational power structures (e.g., new management information and data collection systems, different evaluation processes); and
5. Changing either the organizational structure of the schools or their relation to external authority (e.g., team teaching, community control of schools).

In general, as we ascend the Pincus typology, we move from relatively superficial, "more-of-the-same," incremental approaches to more comprehensive approaches to school change, but we also tend to shift from curriculum and instruction systems to management and policymaking systems. Culbertson (1977, pp. 278-300) points out that three school district subsystems may be targets of change efforts:

1. Teaching and learning, in which principals, teachers, and teacher association leaders may be the key actors;
2. Management and leadership, in which principals, superintendents, and other educational leaders play key roles; and
3. Policymaking and governance, in which school board members, superintendents, directors of educational planning, and other school and community leaders may be key participants.

Lipham (1977, pp. 140-143) provides a more extensive three-dimensional taxonomy of educational functions (e.g., curriculum and instruction, staff personnel, educational facilities), educational supports (e.g., financial, informational, political), and educational agencies (e.g., national agencies, colleges and universities, intermediate service agencies, local school system agencies).

To summarize this section, we see that answers to questions about scope, style, and objectives of change force us to specify what is to be changed and how change is to be approached. Schmidtlein's comprehensive/prescriptive - incremental/remedial continuum helps us sort out basic philosophical and methodological differences among change planners and practitioners as to what can be known and controlled in undertaking complex human and social change efforts. The time horizon taken by change agents significantly affects what may be attempted and also the choice, timing, and sequence of change strategies.

The choice of levels of change target (e.g., individual, group, organization) and the type of system (teaching - learning; management and leadership; policymaking and governance) begin to define the specific types of school system change that may be considered. The Pincus typology reminds us that change may range from relatively superficial, "more-of-the-same" efforts (perhaps with different labels or titles) to fundamental alteration in organizational goals, structures, or functions. Finally, the Lipham taxonomy helps us to "map" change efforts in three dimensions involving types of educational functions, types of support, and types of agencies involved. The last dimension, types of involved agencies, leads us to our final question.

Who is attempting to accomplish the change and for what purpose? This final question is perhaps the most fundamental. In the field of education, it is unlikely that, even in a specific instance of attempted change, only one person is the prime mover. Typically, several persons, often representing different offices or agencies and different vested interests, join the effort. Hence different persons and different purposes may be represented.

If we focus more narrowly on the change agent, the issue becomes only slightly less complicated. Butler and Paisley (1978, pp. 23-26) point out that the change agent operates within multiple contexts of contact between the client and the agent. These include: (a) the usually common cultural and historical contexts that tend to shape the general values, beliefs, and practices of both parties; (b) the specific political, economic, organizational, and work contexts of the client; and (c) the specific (and often different) political, economic, organizational, and work contexts of the change agent. Butler and Paisley identify an archetypal case of a dissemination program based in a state department of education and serving clients at the school district and the school building levels. The politics and economics of state level versus local level may be different (and there may even be differences between the district and the building levels). The organizational and the work contexts at the state, district, and building levels obviously differ in many respects. Each of these different aspects of context (cultural, historical, political, economic, organizational, and work) may have its effect of the change agent's determination of purposes and objectives.

/ Within the historical and other contexts identified above, Butler and Paisley propose two dimensions that seem strongly to differentiate the purposes, roles, and functions of change agents. One dimension involves the intra-organizational versus extra-organizational locus of their activity. The second dimension differentiates their purposes, roles, and functions in terms of their "entitlement" to act in different ways on behalf of the client organization.

In educational "dissemination" projects the agent is usually based outside the client organization and may attempt to serve a number of clients in the same period of time. The agents typically present themselves to client organizations as available external resources whose lack of detailed knowledge concerning the client organizations could be compensated for by an energetic commitment of time and effort to clients' problems, by access to external knowledge bases and other resources that may be employable, and by the special knowledge or expertise of the agent. In virtually every case the external agent has a special entitlement that also carries numerous obligations.

Internal agents may or may not be associated with externally sponsored efforts. The internal agent is likely to be very knowledgeable about the organization, but may have the impediment of being associated with a particular organizational function or faction; consequently the internal agent may be seen by some as "inside our school system but not one of us." Thus, both the external and the internal agent have "boundary spanning" functions. Their general purposes are to bring into an organization, or into a subunit within an organization, the knowledge, skills, or resources that are needed but lacking. The external agent especially links the organization to extra-organizational knowledge sources, but may also facilitate communication and knowledge transfer across internal organizational boundaries. The internal agent tends to perform the same functions, but typically with greater emphasis on developing and using the knowledge and other resources of the organization itself.

Because agents span boundaries, they come in contact with and are influenced by the expectations, demands, and requirements of many different persons and agencies. Hence, client questions like "For whom are you really working? Can I trust you? What's in it for you?" are probes of the agent's motivations and loyalties. "Entitlements" may help the agent and the client to define and find answers to questions of this kind.

Butler and Paisley (1978, pp. 30-32) suggest a second major dimension that helps to sort out who change agents are and what their purpose may be: the "entitlement" to act in different ways on behalf of client organizations. To fix ideas, they describe three modal linking roles that result from three different entitlements. These are:

1. RESOURCE FINDER. At the lowest level of entitlement, a linking agent serves as intermediary between the client organization and knowledge resources. The linking agent may conduct information searches or make interpersonal contacts to find answers to clients' questions. The linking agent "negotiates" clients' questions to make them answerable, but does not undertake an analysis of the client organization to determine if correct questions are being asked. Information is turned over to clients in the form of bibliographies, documents, briefing memos, etc. Only infrequently is the resource finder called upon to make presentations to clients; moreover, the structuring of information into a set of recommendations usually goes beyond the entitlement of this role.

2. PROCESS HELPER. Given some degree of entitlement to become involved with the actual problems of the client organization, the linking agent becomes a process helper. The process in question may be technical (facilitating problem analysis and decisionmaking), interpersonal (facilitating group interaction and managing conflict), or both. The process helper may be a proponent of a particular approach to problem analysis, group dynamics, etc., but is neutral with respect to the substantive problem or decision.

3. SOLUTION GIVER. Given entitlement to represent one solution or set of solutions to the client organization's problems, the linking agent becomes a solution giver. The auspices under which the solution giver works with a client organization are more important than the auspices of resource finding or process helping. The solution giver is often affiliated with an R&D organization or other product developer

> whose reputation becomes part of the solution giver's entitlement. Some linking agents in this role act as brokers for extensive sets of solutions, such as those catalogued in Educational Programs That Work.

The general terms in which these three roles are described derive from Piele (1976), but the concept of "entitlement" is the effort of Butler and Paisley to account for marked differences in the approach of linking agents to clients and the nature of the ensuing exchange. They note:

> "At a simple level of analysis, the linking agent and client form a communication dyad. Each brings to the exchange a frame of reference (cognitive structure), a set of assumptions concerning the purposes of the exchange, an agenda of goals, and expectations concerning the role that the other will play. Expectations concerning the other's role are one aspect of 'entitlement,' as is the concept of 'legitimation' from the sociology of roles."
>
> "However, entitlement to play a particular linking role is more than an ascription from the client of the moment. Entitlement travels from one client to another with the linking agent, and one of the initial tasks of the linking agent in contracting a new client is to clarify--and justify if necessary--the entitlement under which certain linking funcitons are to be performed. Linking functions themselves are only partly indicative of the particular role; there is functional overlap among the roles. The auspices of the linking agent's work are an even poorer indicator of the role, since employees of the same organization may act as resource finders, process helpers, and solution givers."
>
> "Thus, entitlement is a useful but somewhat hazy concept that is formed from an amalgam of expectation, legitimation, auspices, functions, and another factor that is best described as the linking agent's presentation of self (Goffman, 1969). In communication dyads, expectations concerning the other's role may be modified by the exchange itself..... There is every reason to believe that linking agentry roles are as dynamic and changing as leadership roles and that 'emergent linking agentry' is not only theoretically possible but also common in the field."

Hence, the concept of entitlement involves the idea of a dynamic interplay between the agent and client, in which both parties may modify, refine, or expand their expectations and conceptions of the purposes, roles, and functions of the change agent(s).

Butler and Paisley note that entitlement travels from one client to another with the agent, and that one of the initial tasks of the agent is to clarify and, if necessary, justify the entitlement under which the agent proposes to act. Moore's (1977) analysis of assistance strategies of six Technical Assistance Groups (TAGs) concluded that effective TAGs have deliberately worked on developing and refining well-articulated delineations of their basic goals, philosophies, and strategies and that through recruitment, selection, socialization, and apprenticeships involving role modeling and supervised field experience the TAG sought to develop agents who could work effectively with clients but maintain a clear identity with the basic mission and ideology of the TAG. Most educational change agents tend not to work as members of a closely knit team. The Sieber et al. (1972) description of the Pilot State Dissemination effort provides a picture of a sense of isolation among field agents who generally received little ideological or substantive guidance or moral support. These isolated agents developed their own views of project goals and defined their own roles vis-a-vis their clients and the centralized project. These views often differed markedly from those held by project management, with negative consequences in both operational and human costs.

In general, case studies and evaluations of educational change efforts tend to indicate that: (a) initially there may be major discrepancies among the expectations held by sponsors, change program managers, the agents themselves, and their several clients concerning the goals, purposes, and roles of the change agent; (b) despite these discrepancies, the views of the various parties are often quite fuzzy and incomplete; (c) over time these views tend to evolve and be refined; (d) successful change efforts are usually marked by deliberate efforts to reduce discrepancies (usually involving accommodation among all parties), but the agents themselves are often the key to achieving needed adjustments among sponsor, manager, and client expectations and conceptions; and (e) consequently, the change agent also performs a "meta-linkage" function by enabling stakeholders at various levels (e.g., policymakers, sponsors, project managers, and clients) to develop more realsitic and consonant conceptions of what could or should be attempted and the needed role of each party.

Summary. In this section a number of orientations toward educational change were examined in terms of seven questions. Perhaps the most important orientation is identified by asking: Who is looking at the change process? Orientations toward change may vary significantly depending on one's functional role (e.g., policymaker, change agent, client), level and type of organization, type of position, and disciplinary orientation. The next two questions focus on the social level of the change effort and the perceived source of change impetus. Change efforts may be directed toward changing individuals, groups, organizations, etc. The level selected is often related to the different views as to the strategic locus of change. These different views result in different types of change models: Individual Change Models, Group Change Models, Organizational Change Models, Environmental Change Models, and Systematic Change Models.

The next pair of questions focus on the change agent's view of the client and the agent's choice of strategies. The change agent may take many different views concerning client motivation, competency, and ability to undertake change. These result in approaches that range from non-directive to highly-directive interventions. When several persons or groups are involved, the change agent is also confronted with conflicting values and interests. Although there are many alternative assumptions that the agent can make about clients, and there are an even larger number of strategies and tactics that can be employed, most planned change strategies can be classified as belonging to one or more of three basic types: power strategies, manipulative strategies, or rational strategies.

Regardless of the level of the target of change, general assumptions concerning client motivation, and choice of strategies, there may also be significant differences in intended scope, style, and objectives of change. A fundamental philosophical difference exists with respect to how comprehensive and prescriptive a change approach should be. The time horizon is also a significant perspective, e.g., is the change perceived as short-term or of long duration. The scope of educational change may vary from relatively superficial "cosmetic" change to major alterations in organizational goals, structures, and functions.

Finally, the question as to who is attempting to accomplish the change, and for what purpose, is perhaps the most fundamental one to ask. Typically in the field of education several parties, often representing different offices or agencies and different vested interests, join the effort. Consequently there is rarely a simple answer to this question. Although change agents and their clients may share common cultural and historical contexts, they may be part of significantly different political, economic, organizational and work contexts that may differentially influence the agent's and the client's views of change purposes and objectives. When change agents are internal to the organization in which change is attempted, these context differences may not be so large as they are for the external agent, but there may be the impediment of being associated with a particular organizational function or faction. Consequently both the internal and the external agent have "boundary spanning" functions. Their general function is to bring into an organization, or into a subunit within an organization, the knowledge, skill, or resources that are needed. Because agents span boundaries, they come into contact with and are influenced by the expectations, demands, and requirements of many different persons and agencies. Butler and Paisley propose the concept of "entitlement" to account for marked differences in the purposes and approaches of linking agents to clients and the nature of the ensuing exchange. Entitlements to act on behalf of client organizations tend to be associated with modal change agent roles (e.g., resource finder, process helper, solution giver) that tend to be defined in terms of the general purposes, sets of resources, and types of experience and skills of the agent. The concept of entitlement involves the idea of a dynamic interplay between agent and client, and also between types of agents and their client communities, in which both parties may modify, refine, or expand their conceptions of the purpose, roles, and functions of the change agent. Generally, these modifications are made within the broad range of a modal role (e.g., process helper).

When all the various combinations of change orientations are considered, an extremely large number of different views may be taken. However, despite these many orientations, most "systematic" views of change may be related to one of a small number of fundamental conceptual models.

## III. SYSTEMATIC CONCEPTUAL MODELS OF CHANGE

Glaser et al. (1976, Chapter 5) and Sashkin et al. (1973) provide succinct summaries of knowledge utilization models. Glaser et al. point out that the term "model" is used in a number of different senses and that model building is in a fluid state. Model builders may draw on theory, experience, or validated evidence in varying degrees. In some instances, the model consists of a set of factors or variables that are considered important. In other instances, the models go further in connecting specific elements, but do little more than arrange the elements in a series of stages through which the process of dissemination and utilization may proceed. Others have applied theories and models borrowed from related disciplines, such as communications theory or social psychology. Finally, there are the "systematic" models that employ the constructs of systems theory in an effort to examine the dynamic, transactional relationships among elements. Glaser et al. briefly review each of these several levels of model building.

For our purposes, the systematic models, where relatively complete conceptual systems are offered, may be most useful in examining alternative conceptions of linkage and linking agent functions. Glaser et al. (1976) and Sashkin, Morris, and Horst (1973) provide useful comparisons of these several systematic models. The first three were identified by Havelock (1969) as the RD&D Model, the Social Interaction Model, and the Problem-Solving Model. Sashkin et al. (1973) accepted the first two of Havelock's models, but apparently divided his third problem-solving model into three separate models: Intervention Theory Model, Planned Change Model, and Action/Research Model. Finally, Havelock and Lingwood (1973) described in detail the Linkage Process Model that Havelock had introduced earlier (1969).

- RD&D Model. This model assumes the existence of a relatively passive consumer who will accept an innovation if it is delivered through a suitable medium, in the right way, and at the right time. The model calls for a rational sequence of activities from research to development to diffusion (including packaging, marketing, and distribution). It assumes the existence of a relatively large number of consumers and requires a high initial development cost which is justified in anticipation of a high payoff in the quantity and quality of long-range benefits through its capacity to reach a mass market. Because of the risks, large-scale planning and pilot work precede actual development, and evaluation is particularly emphasized in this model. There is usually a division of labor and separation of roles.

  The RD&D Model has been characterized as being excessively research-oriented and insufficiently user-oriented, as ignoring major aspects of the communication process, and as failing to attend to user implementation, adaptation, and maintenance requirements. Moreover, the extreme importance of a "marketing" orientation in planning and evaluation has been lost in most translations of this model in education, with the consequence that many RD&D efforts have not had great impact on users*

- Social Interaction Diffusion Model. This model has its roots in anthropological studies of the diffusion of cultural traits and in sociological studies of the diffusion of innovations. When compared with the RD&D Model, this model is significantly more sensitive to the complex and intricate set of human relationships, societal and organizational substructures, and communication processes involved in the dissemination phase. This model implies that a user can hold a variety of positions in the communication network, and that people tend to adopt and maintain attitudes and behavior they perceive as normative for their psychological reference group(s). Unlike the RD&D Model, the size of the adopting groups is basically irrelevant for this model. What is pertinent are the process stages of knowledge and R&D diffusion with the selection of appropriate influencing strategies to be used at each stage.

  The Social Interaction Diffusion Model can be critized for dealing inadequately with the ways innovations are created, for regarding the user or the user system as a relatively passive consumer, and for failing to deal with events that follow an adoption in terms of changes in the organized social systems of educational consumers and providers.*

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* Hood (1970) proposed that a marketing approach was needed for the development and dissemination of educational products. Kotler et al. (1977) have described the specifics of a marketing approach that entails focusing on the needs of potential product users as a basis for product development and dissemination. On the basis of research pertaining to user behavior, homogeneous markets can be identified, and product, price, channel, and promotional strategies can be developed to satisfy educators' needs.

- The Problem-Solving Model. This model, unlike the previous two, assumes that users' needs are paramount in the utilization of knowledge or in selecting and adopting a specific innovation. The model places heavy emphasis on a diagnostic approach that emphasizes diagnosis of needs, followed by active search, selection, trial, and adaptive incorporation. In this model, the outside helper, or change agent, is largely non-directive, mainly guiding the potential user through his/her own problem-solving processes and encouraging use of internal resources. The model assumes that self-initiated and self-directed change offers the firmest motivation and hence the best prospect for maintenance.

  The Problem-Solving Model has many attractive features, but it poses problems for external, R&D use-oriented change agents because of its non-directive character and strong reliance on development of internal resources. Moreover, gaining access to appropriate clients, being accessible when needed, and being able to play the required non-directive role over protracted periods of time place the model out of the reach of many educational linking agents. Finally, the model (usually) is appropriate to effect change only with individuals and small groups because of its relative lack of attention to organizational change requirements.

- Therapeutic-Intervention Theory Model. Whereas the Problem-Solving Model is essentially rational and non-directive, intervention approaches tend to focus on emotional issues that may inhibit rationality. These approaches are perhaps less a model and more a set of alternative kinds of interventions that may be employed by the therapeutically-oriented change agent who confronts non-rational barriers to more rational problem-solving. Five types of interventions appear to be most common: crisis, cathartic, catalytic, confrontation, and prescriptive.

  Crisis intervention involves delivering change-support services during initial, acute phases of distress. Classical crisis theory holds that the way a crisis is resolved has significant consequences for future personal or organizational development. A wide variety of change agent tactics may be employed including any others among the following.

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* The Concerns Based Adoption Model, CBAM (Hall et al., 1973, 1974), significantly extends the Social Interaction Process view of how various clients may respond during various stages of the process of adoption. The basic hypothesis of CBAM is that the key to facilitating adoption of a change is guiding the client through various stages of concern that are associated with different levels of use of an innovation.

Cathartic intervention aims to help a client sort out emotions in order to get a more objective view of the situation. Cathartic interventions may be attempted when the change agent believes that emotions and feelings are hampering performance or disturbing behavior. After clients have been helped to experience, express, discuss, and "work through" their emotions, it may be more likely that other, more objective problem-solving approaches may be taken.

Catalytic intervention aims at facilitating an ongoing process. It is based on two key assumptions. One is that whatever is keeping problem-solving from moving at a faster rate or from being of higher quality can be reduced by using information that is available but for some reason is not being brought to bear on the situation. The second assumption is that one needs to focus on the procedures clients are employing in approaching their problmes. This type of intervention attempts to induce clients to examine their own thinking, to discuss the character of their teamwork and communication, etc. The intended objectives are to encourage their situation more objectively, to understand the actions necessary for increasing personal and organizational effectiveness, and to acquire better interpersonal and decision-making skills.

Confrontation intervention may be used if it appears that the client's values and assumptions are inappropriate or unjustified. By challenging clients to examine their values and assumptions, the change agent may be able to help them gain explicit understanding and see alternative values and asssumptions that might provide a better basis for behavior.

Prescriptive intervention includes a variety of directive counseling and behavioral modification approaches. Basically, the procedure involves telling the client what to do, and often includes supervision and reinforcement of the client's behavior. These interventions operate on the premise that the client lacks the necessary knowledge or objectivity to make a self-diagnosis, and that the change agent is qualified to identify the client's true needs and to prescribe the actions needed to solve the problem.

When intervention strategies are used in combination with problem-solving strategies and when group, organizational, or environmental factors are included, we encounter more comprehensive models of planned change.

- The Planned Change Model. This model may encompass aspects of any of the previous three models, but is distinct in its organizational change emphasis and in its systematic attention to timing and phasing of change-support activities. In its organizational development guise, this is perhaps the most ambitious of all the models considered here, since it aims at improving the quality of life for members of organizations and at increasing the institutional effectiveness of those organizations. In this model, information is considered useful only if it leads to action and is shared between the change agent and the client. The model assumes that improvement-oriented change occurs through a consciously controlled, sequential, and continuous process of data generation, planning, implementation, and recycling of the process until satisfactory results are achieved; then deliberate actions are taken to stabilize and support the changes made. Although the model may be considered a more elaborate version of the problem-solving model, it also typically encompasses intervention theory models. Many versions of organizational development (OD) are associated with this model.

The Planned Change Model is sometimes faulted for emphasizing specific problems and changes rather than the change process and also for excessive preoccupation with often limited sets of tactics (e.g., interpersonal skills development, team building, or survey feedback). However, the Planned Change Model is in ferment as it confronts the problems of power and the issues of value conflicts within and outside specific client systems.

- The Action Research Model. Although similar in some respects to the Problem-Solving, Intervention, and Planned Change Models, this model is distinguished from them by its emphasis on the development of a disciplined inquiry capacity within the client organization. The model assumes the action research to be a continuous process of research, action, evaluation, and more research.*

  The Action Research Model is limited, at least initially, in its choice of type of research and methodology by its point of entry to the client system and by the immediate concerns of key clients in that system. Considerable commitment and effort are required on the part of the client, and the change agent is required to play multiple roles. The action research emphasis tends to focus attention on the process of change (through action research) rather than on specific changes; hence, additional change support may be needed to implement specific changes.

In the above six models, we find a progression from attention on articulation of external sources, with relatively little attention on the client, to increasing attention on building internal, personal, and organizational capacity in client systems. In our final model, we observe an effort to establish more effective systemic linkages within and between various knowledge resource systems and knowledge user systems.

- The Problem-Solving Dialogue or Linkage Process Model. This model is conceptualized in terms of four components: the client or user system, the knowledge or resource system, a needs processing system, and a solution processing system. The first two of these components are both problem-solving systems, whereas the last two components represent the dialogue (linkage processes) between the two problem-solving systems. For Havelock and Lingwood, the concept of linkage starts with the user as a problem-solver who is helped to learn a problem-solving cycle made up of initially felt need, diagnosis, problem statement, search, retrieval, solution fabrication, and solution application phases. However, the linkage process model stresses that the user must be meaningfully related to outside resources. To accomplish this, the user must enter into a reciprocal and collaborative relationship with an interactive resource system capable of maintaining reciprocal feedback between the user and the resource system.

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* Variants of the Action Research Model may focus on developing evaluation or comprehensive planning capacities.

Although this model is frequently reified at the level of an individual user and an individual linking agent who links the client to the resource system, the model is actually intended to apply at micro-, meso-, and macro-system levels. Linkers are expected to develop reciprocal and collaborative relationships, not only with potential users, but also with a large and diverse group of other resource systems.

Implications for Change Agents. All seven of the above models may involve the use of a change agent or consultant; however, the role, knowledge resource, training, and other support requirements for change agents differ significantly in the various models.

The first two models (RD&D and Social Interaction Diffusion) emphasize the dissemination and use of externally developed knowledge (programs and products) by large numbers of potential users. Agents associated with these models must thus be concerned with reaching and influencing many clients, and usually cannot afford to spend much time with individual clients. Hence, marketing, mass media, direct mail, demonstrations, and workshops may be favored tactics to reach many prospective users. By contrast, the next four models (Problem-Solving, Therapeutic-Intervention, Planned Change, and Action Research) are not appropriate unless the agent is able and willing to spend significant amounts of time with specific clients (individuals, groups, or organizations). In the Problem-Solving and the Therapeutic-Intervention Models, internal knowledge sources are emphasized. In the Planned Change and the Action Research Models, both internal and external sources of knowledge are employed.

Generally, the Problem-Solving and the Therapeutic-Intervention Models will be used with individuals or small groups. However, the Planned Change and Action Research Models may be applied at nearly any social level. All four of these models, and especially the last two, require a wide range of change agent technical and interpersonal competencies.

The Linkage Process Model, because of its comprehensive, macrosystem perspective on the need to link a wide variety of agencies and institutions, defies any simple characterization of implications for linking agents, since many different kinds of linking agent roles are implied by the model (e.g., linking policy institutions with research institutions; linking research communities with development communities; linking educational practitioners with knowledge resources). Hence, it may be useful to examine Havelock's conception of macrosystem linkages.

Macrosystem Linkages. Each of the seven models described above may be employed to look at large-scale D&U processes; however, the RD&D and the Linkage Process Models appear to be the only ones that explicitly attempt to span the complete range of basic research, applied R&D, dissemination, and utilization. Regarding the RD&D Model, Havelock (1969, p. 2-42) notes:

> "It would appear to be an article of faith in the United States that basic science is useful to man, and presumably this is what is taught in the schools. ...Usually there is only a dim understanding of how the knowledge gets transformed into something useful, but the firm belief remains that somehow it filters down."

Allen (1977, pp. 48-49) reinforces this point with the following conclusion:

> "Despite the long-held belief in a continuous progression from basic research through applied research to development, empirical investigation has found little support for such a situation. It is becoming generally accepted that technology builds on itself and advances quite independently of any links with the scientific frontier, and

> often without any necessity for an understanding of the basic science which underlies it. ...The familiar notion of science providing the basis upon which technology is build to be later utilized in commerce or industry has been shown by the historians of science to have only a limited basis in historical fact."

Allen goes on to note (p. 57) that, whereas science and technology in general may progress quite independently of each other, some technologies are more closely connected with science than others. In general, the social sciences are not closely coupled (Brittain, 1970; Lin, Garvey, and Nelson, 1970), and there appears to be even poorer connection in the field of education (Nelson, Garvey, and Lin, 1970; Nelson, 1970, 1972a; Nelson and Wikoff, 1973; Hood, 1973; Short, 1973; Hood, Blackwell, Mick, and Katter, 1976).

This lack of connection prompted Havelock (1969, chapter 3) to examine the concept of macrosystem knowledge flow. In his discussion, Havelock made four principal points. First, he asserted that the university is the primary (but not the sole) source, storage point, and cultural carrier of expert knowledge in all fields, basic and applied. Unfortunately, the university rarely takes any active responsibility for diffusing this knowledge or insuring that it gets used. His second point, then, is to suggest that this responsibility seems to reside in three sectors of the practice world: the professions, the product organizations, and the service organizations. His third point is that the consumer's power to influence would-be "helpers" is very limited. His last point is that some integrating forces (principally the communications media, specialized linking roles, temporary systems, and permanent linking systems) are working for greater coordination of the total process from the university laboratory to the classroom.

Perhaps the earliest efforts to bridge the gaps between the components of the educational D&U macrosystem (e.g., basic research, applied R&D, practice systems, consumer systems) were through media. Innumerable journals, magazines, and newsletters "explain" research to practitioners and practice to consumers. These media create awareness of new ideas, products, and practices long before they are broadly accessible. Hence, they may prepare anyone "downstream" as to what to expect in the near and distant future. However, print and other forms of mass media alone are rarely effective to convey significant amounts of information or to effect behavioral or organizational change. A major shortcoming of the mass media is their inability to involve audiences directly and actively. However, there are "print-prone" users who seek out and are able to assimilate large quantities of information they can translate for use by themselves or can pass on to others.

Linking Roles. As we examine the types of individuals in any of the several D&U communities, we find individuals who stand between sources of knowledge and potential consumers. Sometimes these "linkers" are merely conveyors of information--from one part of the organization to another, from outside the organization to inside, or from one D&U subsystem to another. But a few play significant roles in orchestrating communication and knowledge transfer activities among subsystems.

Temporary Systems. In the field of educational D&U, there have been a number of occasions to bring together representatives of the R&D, practice support, and practitioner communities to discuss D&U problems and to form personal relationships that sometimes lead to more effective intersystem linkage. Havelock refers to these as temporary systems. He notes that these temporary systems create opportunities for people from different worlds (e.g., research, dissemination, practice) to initiate long-term personal contacts and that these contacts may lead to more permanent organizations which represent a continuing linkage.

Permanent Linking Systems. Permanent linking systems in the field of education are so relatively new and rare or specialized that some would question their existence. Certainly there is nothing approaching the comprehensive and formal character of the Cooperative Extension Service in agriculture. However, in our view, the ERIC system and the National Diffusion Network are possible candidates in that they serve to link aspects of R&D to broad classes of consumers. Several specialized areas of education, such as vocational education and special education, also have developed more or less permanent linkage systems.

Havelock and Lingwood (1973), in an extensive study of the R&D utilization strategies of four federal agencies, analyzed the D&U functions and activities of these agencies in terms of their configurational model of resource-user problem-solving dialogue (The Problem-Solving Process Model). Among the many findings and conclusions of that study, they noted that linkage is the most important procedural element in D&U and the most cited target for system improvement. The report contains many detailed suggestions for improving linkages among the multiplicity of levels and types of education agencies. Subsequently, aspects of this problem have been addressed by Guba and Clark (1974) in The Configurational Perspective: A View of Educational Knowledge Production and Utilization, by Sieber (1975) in The Requirements of a National R&D System, by Radnor, Spivak, Hofler, and Young (1975) in Agency/Field Relationships in the Educational R/D&I System, by the Interstate Project on Dissemination (1976), and by the Dissemination Analysis Group (1977).

In all of these analyses, there is an acknowledgment that educational knowledge production and utilization is an extremely loosely-coupled community of autonomous individuals, agencies, and programs that can be considered systemic in only the grossest conceptions of social systems. Hence, there is great interest in how to effect communication, cooperation, coordination, and orchestration among largely independent programs, agencies, and activities, and in possible ways of building and nuturing more effective capability to produce and disseminate knowledge (in all forms) that is pertinent to, accessible to, and usable by educational practitioners. We must emphasize that this proposed configuration will require linkages and linking agents of many different varieties. Some will be needed to span gaps between policymakers and R&D sponsors, between sponsors and R&D performers, between basic researchers and applied R&D personnel, between applied R&D and dissemination personnel, and so on. The point is simply that linkage and linking agents may be needed at many "interfaces" between various elements of the total educational research, development, dissemination, and utilization spectrum. Although effective linkage to the ultimate user may be the "bottom line" in any final evaluation, it is by no means the only place where attention to linkage and the need for effective linking agents may offer significant opportunities for increasing the overall effectiveness of the total educational knowledge production and utilization operation.

However, in this paper our attention is directed only at the problem of improving linkages and increasing linking agent effectiveness in ways that will directly affect the educational practice community.

## IV. RECENT CONCEPTIONS OF THE LINKAGE AGENT AND AGENCIES

General Conceptions. In the previous two sections we have examined a large number of perspectives on change and change agent behavior that were first organized around seven questions concerning change and then examined in terms of an equal number of systematic models of the change process. In the last part of the previous section we noted that the concept of linkage can be very general. It may apply to micro-system (e.g., individual to individual), intermediate-level-system (e.g., agency to agency), or macro-system (e.g., research system to client system) linkages, and it may be accomplished by a variety of means (e.g., mass media, printed materials, demonstrations and meetings, conferences and seminars). However, of all the means for establishing more effective linking mechanisms, the linkage agent or agency is the most recent, the most complex, and the most promising. Lippitt (1965) appears to be the first author to suggest the term "linking agent;" however, various related concepts such as "social engineer" (Watson, 1945) appear in earlier literature.

Glasser and Wrenn (1966) envisioned a change aid team which might go to any city or institution to help in the process of implementing change by system changes. Lazarsfeld et al. (1967) addressed the problem of collaboration between clients and sociologists and envisioned a new profession of persons who would be able to understand the social scientist and yet be well acquainted with the practical problems of the client. The use of a consultant in this middle-person role was proposed by Lippitt and Havelock (1968) and Havelock (1968). The functions of this middle-person role were elaborated by Havelock (1969) in the following typology of knowledge linking roles and functions:

| ROLE | FUNCTIONS |
|---|---|
| Conveyor | transfers knowledge from producers (scientist, experts, scholars, developers, researchers, and manufacturers) to users. |
| Consultant | assists users in identification of problems and resources, provides linkage to appropriate resources, assists in adaptation, serves as a process facilitator. |
| Trainer | instills in the user an understanding of an entire area of knowledge or practice. |
| Leader | effects linkage through power or influence in one's own group. |
| Innovator | initiates diffusion in the user system (includes originator and also the first user in a social system to adopt an innovation). |
| Defender | sensitizes users to the pitfalls of innovations, mobilizes public opinion, public sensitivity, and public demand for adequate applications. |

In addition to these generic roles, Havelock identified individuals associated with knowledge production, dissemination, and utilization subsystems who play different linkage roles:

| | |
|---|---|
| Knowledge builder as linker | serves as gatekeeper of knowledge utilization, maintains dual orientation of scientific soundness and usefulness (includes basic scientist, scholar, applied researcher, R&D manager, and engineer). |
| Practitioner as linker | makes available to clients those practices and services that incorporate the latest scientific knowledge (includes applied science professionals, consultants, technicians). |
| User as linker | takes initiative on own behalf to seek out scientific knowledge and derive useful learning therefrom. |

Although much of the literature focuses on individual roles or teams of persons, Havelock and others have identified linking agencies and linking systems. Perhaps the most frequently cited complex example of a linkage system has been the much publicized achievements of the Cooperative Extension Service (CES). The CES is unique in providing information and information-based services to agricultural clients regarding the complete spectrum of on-the-farm needs, including seeds, soils, land use, climate, pest control, all aspects of animal husbandry, farm management, home economics, and marketing. The cornerstone of this system is knowledge, much of it based on sound research and development or on experimental farm-tested and proven practices. However, this knowledge base is augmented by a broad variety of print and other media designed for specific agricultural users, preservice and inservice education of agricultural personnel, state demonstration projects, and technical assistance services. Extension specialists provide the human linkage with various specialized disciplinary or problem-oriented knowledge bases, and county agents provide linkage with local agricultural clients. The CES therefore provides a complex example of (a) linkage agents, (b) linkage agencies, and (c) an integrated linkage system. These CES examples have strongly influenced the conceptualization of linkage in education.

Recent concepts in the field of education. Piele (1975) attempted a broad review and analysis of the role, activities, and training of educational linking agents based on accessible literature published in the previous five years. Piele noted that writers have proposed various models of the change process and in some cases have undertaken efforts to demonstrate that the particular linking agent role their models envisioned would lead to more effective dissemination and utilization. "But few descriptive and comparative studies appear to have been conducted to determine which of these roles is most effective, and fewer still have reached meaningful conclusions" (p. ii).

As part of this analysis Piele examined several different models of the change process and their implications for linking agent roles. He noted that innovation-specific models (e.g., RD&D and perhaps Social Interaction Diffusion) are geared toward the diffusion and adoption of specific innovations and assume that most of the problem-solving work has been done before adoption takes place and that many of the problems of adaptation/maintenance have already been anticipated and solved. By contrast, the Problem-Solving Models (and their variants, e.g., Intervention Strategies, Planned Change, Action Research) tend to be oriented primarily to the process of innovation adoption or problem solution within the client system. Piele concludes that the different loci of problem-solving expertise implies further that there will be fundamentally different modes of interaction between agent and client, ranging primarily from directive (where the goal is adoption of a specific innovation) to collaborative (where adaptation and client development of innovation process skills are the crucial goal) to non-directive (where problem-solving per se may be the primary objective).

From these distinctions Piele infers three principal types of linking agent roles and, borrowing from Havelock's role terminology, labels these: resource linker, process helper, and solution giver. Piele notes that the differences among these roles are too substantive to be simply the results of emphasizing different aspects of the change process. Rather, they describe several different change processes (Butler and Paisley would say "entitlements") that cover a whole range of possibilities from adoption of finished R&D products (solution giver) through adaptation of externally developed knowledge skills and innovations (resource linker) to user-initiated problem-solving (process helper). After brief descriptions of each role Piele compares their advantages and disadvantages (pp. 28-30):

> The resource linker role is characterized by a low level of interpersonal interaction, a high level of client initiative and responsibility, a low level of involvement with each intervention, and a high level of distribution throughout the system [i.e., can serve many clients in different roles and locations] training for this role can be relatively brief, straightforward, and apparently inexpensive, it quickly prepares the agent to work in the field.
>
> The role of process helper demands a high level of interpersonal interaction, some client initiative and competence in adopting the innovation, and an intermediate level of agent training. The agent will have low distribution through the system initially [i.e., will serve relatively few and often special types of clients], but the transferability (that is, the ability to train others) implied in the role will ultimately give the agent, or at least the linking function, more thorough coverage.
>
> An effective solution giver is highly interpersonal, with low client initiative and a correspondingly high agent responsibility for overseeing the adoption and institutionalization of the innovation. Training for such agents will be expensive and only partially transferable... Thus, the solution giver will have the most intensive involvement with the user system, the narrowest coverage, and the most control over and responsibility for the success of the innovation process.
>
> In short, the nondirective agent role is obviously limited, the collaborative process generalist will have difficulty helping with the installation of complex and sophisticated innovations, and the directive solution giver is expensive and difficult to train. In general the more extensive the agent's coverage, the less intensive his involvement, and the more thorough the training and the higher the level of expertise the more costly and time consuming is the preparation.

Table 1 summarizes Piele's comparisons among roles. However, it also suggests what may be perhaps the most practical organizing notion we have yet encountered for sorting out different linking agent roles and functions, namely how much can one afford to spend per client? The resource linker role costs little in terms of agent skills and training and is low in cost per client.

## Table 1

## COMPARISON OF THREE LINKING AGENT ROLES ACCORDING TO AGENT AND CLIENT CHARACTERISTICS*

| CHARACTERISTICS / ROLE | Resource Linker | Process Helper | Solution Giver |
|---|---|---|---|
| Extent of Agent Skills/ Training Required | Low | Medium | High |
| Interpersonal Interaction | Low | Medium | High |
| Agent Involvement with Intervention | Low | Medium | High |
| Agent Distribution Throughout System | High | Medium | Low |
| Client Initiative | High | Medium | Low |

---

* Modified from Piele (1975, p. 30).

These economies are achieved by avoiding substantial involvement with individual clients and/or individual interventions. To be successful, this role must be *matched* to high initiative and high client capacity to use delivered resources. Obviously, the closer the delivered resources match user readiness, understanding, and capability, the more probable the success of the role. By contrast, the solution-giver role is high in *cost* in terms of required training or skills required of the agent and in terms of time (hence cost) required per client. These skill requirements and per-client time costs exist because of the high degree of interpersonal interaction and high degree of agent involvement in specific innovations. In effect, this role attempts to compensate for what may be low client initiative or capability. If many clients must be served by a few agents, and especially if these agents are relatively unskilled, then the resource-linker role may of necessity be the one played most frequently, simply because it is the least expensive. Process helping is a role that can be played only if (a) the agent possesses the required skills, and (b) the agent has enough time to spend with some, perhaps far from all, clients. The The solution-giver role is feasible only when agent skills are extensive *and* there is ample time to spend with individual clients. Consequently, the roles that are practically employable depend greatly on the breadth (and appropriateness) of the agents' repertoire of skills, but perhaps more directly on the number and accessibility of clients the agent is required to serve. Broadly skilled agents may perform all three roles, but may need to reserve their solution-giver role for a select portion of their clientele.

Piele's review of the literature* and resulting discussions identified a number of problems (Nash and Culbertson, 1977, foreword, p. viii):

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* The Piele paper also discussed several subjects not reviewed here, including criteria for development of training programs, examples of training programs, institutional support for linking agents, research evidence on roles and training, and subjects for further research.

1. The functions of linking agents are not typically related to important system variables that influence change and improvement in schools.
2. Little research exists on the functions of linking agents.
3. Little attention is paid to the nature and quality of the information to be conveyed to practitioners.
4. Linking tends to be equated with change and with adoption of innovations rather than with support to program improvement efforts.
5. The school administrators' role in the linking process is often ignored.
6. The functions of information provision, technical assistance provision, and helping the school system build its capacity to assess and improve education are usually seen as separate and unintegrated roles.

As a subsequent activity, NIE commissioned a group of concept papers which addressed several of the issues identified above. These were published by the University Council for Educational Administration (UCEA) as Linking Processes in Educational Improvement, 1977. This volume was designed to address three objectives:

1. To produce for educational leaders an up-to-date synthesis on the role of linking agents and agencies in educational improvement activities and to identify and discuss important knowledge utilization issues of interest to the research, development, and training communities;
2. To address the immediate realities which internal and external linkers confront and to shed light on the kinds of organizational, human, and knowledge resources available to them;
3. To provide better bases for advancing linkage through new plans and developments.

Although special attention in the volume is directed at improving the training of linkers, the overall goal is to present concepts which "will advance new developments and plans and will stimulate new inquiry into linking agents, linking agencies, and their functions...in order to illuminate the complex processes of linking and their role in facilitating change." In addressing these objectives, each author speaks to a different aspect of the linking process and different aspects of the problems identified by Piele.

Douglas Paul considers change within the context of educational organizations and discusses Havelock's four models of change which can influence and/or be used by linking agents. Paul also draws a series of generalizations and inferences from empirical studies of educational change. Jack Culbertson presents the broad perspective of the larger environment of knowledge resources and uses that are pertinent to change and postulates five uses of knowledge (e.g., to achieve new or improved practices, to improve training programs) that can support those engaged in change or providing support for change.

James Lipham examines the role of the administrator in implementing educational improvement and the leadership functions required in that role. Ann Lieberman discusses linking agencies and the functions these agencies perform in the context of the school as a social system. She examines the understandings, processes, and influential conditions that affect agency functioning.

Issues directly related to the external linking agent are addressed by David Crandall. In examining the "universe of the linking agent," he describes three major perspectives on the current practice of linking agentry, the resource system on which the agent can draw, the client system served by the agent, and the "host agency" where external linkers reside. In addition, he considers in depth the linking agent proper: the multiple roles and functions performed, attributes and skills associated with the roles, and the issues of selection versus training. In discussing linking agent roles and functions, Crandall distinguishes between the front end (pre-decision) and back end (post-decision) phases of the innovation adoption process and identifies five linking agent roles and functions associated with each. The front end is concerned with "creating initial awareness of resources...provoking interest, assisting in some way (even if indirectly) in some kind of initial choice/decision which eliminates some options and sets the stage for the early phase of any implementation efforts." The roles and functions associated with front end activities are:

| ROLE | FUNCTIONS |
|---|---|
| Product peddler | promote sale or adoption of particular product. |
| Information linker | clarify information needs; search for and provide data and information. |
| Program facilitator | provide client with variety of curricular and instructional approaches. |
| Process enabler | assist client with client problem identification and development of appropriate action. |
| Provocateur/doer | devise and initiate alternative futures for education. |

Five complementary back end roles are associated with the post-decision phase of implementation-institutionalization in the innovation process. These are:

| | |
|---|---|
| Resource arranger | assure availability of and access to resources. |
| Information linker | clarify information and resource needs. |
| Technical assister | get kinks out of a particular program; assist with general problem-solving. |

| | |
|---|---|
| Action researcher feedbacker | help schools learn how current experience can be applied to future problems. |
| Educateur/capacity builder | help establish capacity to cope with future problems. |

As a conclusion to the volume, Culbertson depicts a future scenario of a nationwide training system for linkers, he also describes pertinent support functions, concepts, and events which shape the scenario itself. The scenario is intended to be a directional statement rather than a prediction, designed to suggest clues about the ways in which leaders might approach the various facets of linker training in the future.

In an effort to build upon the concepts present in the UCEA volume, the Far West Laboratory commissioned Butler and Paisley (1978) to examine the relationships among linking functions and the linking agent role in the context of factors that determine the functions and affect that role. They describe the historical context in which educational dissemination has evolved and examine three major clusters of dissemination concepts that have been identified and analyzed since 1966: the diffusion of new ideas and practices, the structure and function of dissemination programs, and the multiple concepts in which dissemination occurs.

They note that an analysis of past and present experience in dissemination programs employing linking agent indicates that the roles and functions of linking agents are differentiated along two dimensions. One dimension involves the internal versus external organizational locus of linkage activity. The other dimension involves the linking agent's "entitlement" to act on behalf of the organization in different ways. As has been noted previously, the concept of "entitlement" accounts for marked differences in the approach of linking agents to clients and the nature of the ensuing exchange. As has been noted on page 19, they described the three "entitlements" associated with the three roles described by Piele: Resource Finder, Process Helper, and Solution Giver. These roles and functions are described in terms of the linking agents' mode of operation according to the "entitlement" they are given, their own presentation of self, and their personal style or mode. Hence, these are referred to by Butler and Paisley as "modal" roles.

## V. DEVELOPMENT OF RECENT CONCEPTIONS

An analysis of these discussions and conceptualizations can be made in terms of two questions. First what is the major contribution of the previous papers in considering the six problems identified as a result of the Piele review? Second, what new inquiries should be developed as a result of the conceptualizations?

A summary response to the first question is that both the UCEA volume and the Butler and Paisley paper have provided a valuable synthesis of existing knowledge about the problems. The first group of papers synthesized broad perspectives about linking processes, including: key concepts and findings about change processes; uses of knowledge in change; the management of change (or improvement); the functions of linking agencies in improvement activities; the roles, functions, attributes, and skills of external linking agents; and the possibilities for a national training system for both internal and external linkers. Butler and Paisley narrowed their focus to examine particular factors which determine linking roles and functions.

However, the key word in the response is existing knowledge about problems. The extent to which any of the problems can be adequately addressed is limited by one of the problems itself: little research exists on the functions of linking agents. Inadequate research, in turn, creates a larger difficulty which affects both the approach to examining other problems and the results of the examination. Without adequate empirical evidence, the problems must be approached in terms of what is thought to exist or what ought to exist, based on the examiner's individual observations or experience and on what can be derived from analogous situations and conditions. Conceptualizations derived from such an approach are, in effect, logical reconstructions of what the examiner purports to be the way in which dissemination and linking processes and linking agents work. The conceptualizations cannot (and rarely claim to) represent the details of actual logic-in-use* or the way the processes and agents really work.

The difficulty lies not in the reconstructed logic of the examiner or the resulting conceptual models. Indeed, in the absence of empirical evidence, such reconstructions are necessary to guide the mind in coping with an as-yet intangible reality. Rather, the difficulty lies in generalizations drawn from the models that are applied to planning as if they were derived empirically and thus have predictive power instead of being viewed as generalizations to be submitted to empirical examination. Authors of the previous papers have explicitly and implicitly emphasized the problem of little research and have underscored the difficulties described above with these kinds of statements (emphases added):

> A second objective of the papers is to address the immediate realities which internal and external linkers confront and to shed light on the kind of organizational, human, and knowledge resources available to them. For example, the marginal character of the linkage agent role is depicted, and the attributes needed by linker for effective performance are postulated.
>
> (Nash and Culbertson, 1977, p. 3)

> Thus, the hope is that the concepts presented both will advance new developments and plans and will stimulate new inquiry into linking agents, linking agencies, and their functions. Clearly, such new inquiry is needed to illuminate the complex processes of linking and on their role in facilitating change.
>
> (Nash and Culbertson, 1977, p. 4)

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* The terms "reconstructed logic" and "logic-in-use" are borrowed from Abraham Kaplan. For a detailed discussion of these concepts, see The Conduct of Inquiry (Scranton, PA: Chandler Publishing Co., 1964, pp. 3-12).

> Through an examination of these variables [the sources and uses of knowledge within the educational system], perhaps some of the excesses of faddism in the area of change processes and of the inadequacies in linking roles which are not knowledge-based will be made more evident.
>
> (Culbertson, 1977, p. 74)

> The literature, with few exceptions (Jackson, 1968; Lortie, 1975; Waller, 1932), tells us little of what actually goes on in the classrooms of our schools. Similarly, we know little of the dynamics of educational program improvement efforts (but see Bentzen, 1974; Goodlad, 1975; and Smith and Keith, 1971).
>
> (Crandall, 1977, p. 190)

In addition, Butler and Paisley indicated the lack of strict definition of roles and functions.* Perhaps the most succinct emphasis was Piele's statement (1975, preface):

> "Because the most dominant factor about the entire field is its uncertainty, we feel that the goal of future work in the field should be to expand the base of empirical evidence and to address [recommended research issues]..."

The combined recognition of the need for better information may well be a contribution which equals or exceeds the synthesis of existing knowledge and the examination of determining factors.

The second question can be approached in terms of the primary purpose of the present task--to describe a larger model or pattern of linking functions which appear most crucial for program improvement. Although new inquiries could be framed in terms of any of the numerous problems identified, the purpose of this task dictates two problems which should be reconsidered:

---

* It is important to note that Butler and Paisley state that roles and functions should not be strictly defined at this point so that linking agents can be "trained to be flexible and be encouraged to think of themselves as participants in the invention of new systems and roles." We do not disagree with the need for flexibility or participation in invention. Still, we believe a clearer approach to and/or form of definition is desirable.

1. Little research exists on the functions of linking agents.
2. The important system variables which influence change and improvement in schools are not typically related to the functions of linking agents.

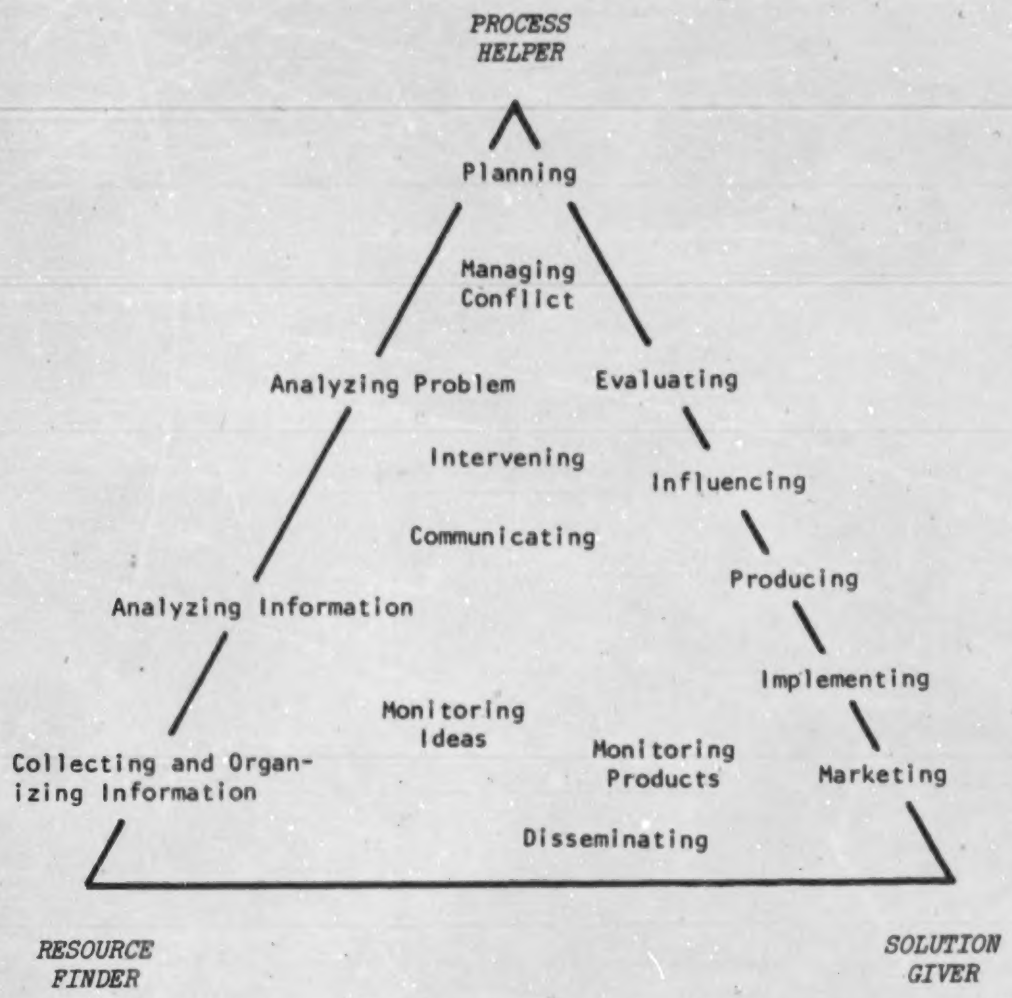
The major contention here is that present difficulties with definitions of linking roles and functions are due, in large measure, to the previous approach taken to constructing definitions and descriptions. The key term here is approach in the singular. For the most part, definitions of linking roles and functions have been derived from theoretical conceptions or from broad generalizations based on diverse and often ill-defined data sources rather than on direct examination of roles, functions, and activities performed by educational linking agents in specific jobs and in specific organizational contexts. This is not to suggest that the modal roles described by Havelock, Piele, Crandall, and Butler and Paisley are non-existent or inaccurate. To the contrary, we agree with Butler and Paisley that: "There is every reason to believe that linking agentry roles are as dynamic and changing as leadership roles and that 'emergent linking agentry' is not only theoretically possible but also common in the field " (1978, p. 32). Moreover, we agree that the boundaries among the roles are permeable and that some, perhaps most, linking agents will move from one role to another to meet the different needs of different client organizations. Some linking agents, if sufficiently skillful and if they have the available time, may play any combination of roles, and a few might play all the roles in varying degrees according to client needs and their own needs and expectations. Similarly, we agree that because there is functional overlap among roles, linking functions themselves are only partly indicative of a particular role.

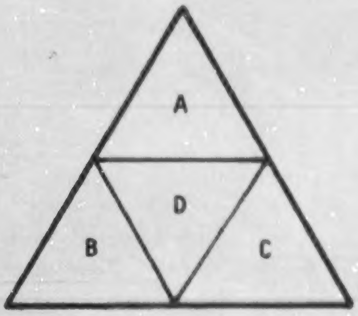
Crandall noted this with the following observation:

> As we focus on the individual linking agent, it is well to remember that we are talking about an abstraction. There is certainly no single ideal type of linking agent on which everyone could agree. The linking agent is commonly though of as an amalgam of the information linker described by Farr (1971) and the change agent discussed by Havelock and others in the general literature of change. Havelock, whose linkages model synthesized the dominant approaches to educational program improvement in the late 1960's, outlines at least four different roles, those of catalyst, resource linker, process helper, and solution giver...
>
> Most observers of the current scene agree that the multitude of functions that the complete linking agent could be called upon to perform requires something of a super-person to execute. It seems to follow that one cannot talk in terms of a single individual but rather needs to consider teams or combinations of individuals...
>
> An array of "archetypical" roles can be used initially to provide a way of specifying narrower definitions and required skills for the roles to be outlined... While acknowledging that a range of roles exists at the present time and will continue to exist in the future, we need to set our long-range site on a somewhat "full" role. This "full" role would have linking agents armed with a full array of skills to be employed as needed by the particular client situation and relationship...
>
> For the first iteration we should concentrate on recruiting and training generalists who, with ongoing support and continued training based on their own experiences, can play an increasingly broad range of roles as appropriate to given situations. There are some who will choose (and this should be a conscious choice) to limit themselves. Fine, so long as new recruits can be attracted while we refine our vision...
>
> ...linking agents need to develop skill in using the optimum of personal and other resources in diverse client situations. This necessity of responding to contingencies on an _ad hoc_ basis argues for acknowledging that there is a range of acceptable role types which can be articulated and employed as organizers for training designs. Or the differential skill requirements for working through long term relationships with various client systems can be used as organizers (Crandall, 1977, pp. 216-218).

(At this point Crandall introduced his own conceptions of ten "archetypical roles"; however, for the purposes of this analysis, we turn now to a conceptualization from Butler and Paisley.)

FIGURE 2 THREE MODAL LINKING ROLES AND THEIR RELATIONSHIP WITH SELECTED LINKING FUNCTIONS





SPECIALIZATIONS:

A *and* B *and* C *and* D = "superlinker"

A *or* B *or* C = linking agent optimally prepared for one mode of client contact, unprepared for other modes of contact

D = generalist linking agent, "scout"

From Butler and Paisley, 1978, p. 33.

The triangular depiction in Figure 2 introduces a new way of thinking about roles and their relations to functions. In this conceptualization, the linker roles, which were described by Havelock and elaborated by Piele, are not seen as functionally well-defined and mutually exclusive categories. Rather they can be seen as less well defined areas of functional specification. The small triangle at the bottom of the figure identifies four idealized specializations: resource finder, process helper, solution giver, and generalist. Note that linking agents may perform any or all of the functions mapped in the triangle. Note also that further specialization, perhaps involving performance of one or two functions, is possible. Conversely, linking agents may perform functions in more than one of the areas of specialization. And, at least in theory, a "superlinker" could play all four specialized roles.

Butler and Paisley (p. 32) expressly note that the boundaries between roles are permeable.

> At least some linking agents seek to extend their entitlement from one role to the others. Different client organizations [and perhaps sponsoring agency missions] create a need for the linking agent to perform different sets of linking functions, thereby moving from the center of one role in the direction of other roles.
>
> ...the three modal roles are represented as apexes of the same triangle of linking functions. If space permitted the inclusion of more detailed functions within the triangle, it would be true that the regions of the triangle surrounding each apex contain functions associated with the roles of resource finding, process helping, and solution giving in their pure or narrow definition theoretically, a linking agent may perform any combination of functions shown in the triangle, but because juxtaposed functions call for related skills it is more likely that a linking agent wil perform a set of functions within one region of the triangle only. (p. 32, emphases added).

Crandall (1977, pp. 218-232) identifies ten archetypical roles that he believes can be currently identified in the field of educational dissemination. One set of five roles relates to the "front-end" of the innovation process--creating initial awareness of resources, provoking interest, assisting clients in search for and choice among alternatives, and setting the stage for early phases of implementation. These roles are:

- Product Peddler--e.g., the commercial book salesperson.
- Information Linker--e.g., the information specialist or reference librarian.
- Program Facilitator--e.g., the NDN State Facilitator.
- Process Enabler--e.g., the OD consultant, communications specialist, process consultant or group facilitator.
- Provocateur/Doer--e.g., the individual who has a vision of alternate futures and provides concrete and workable ideas and leadership.

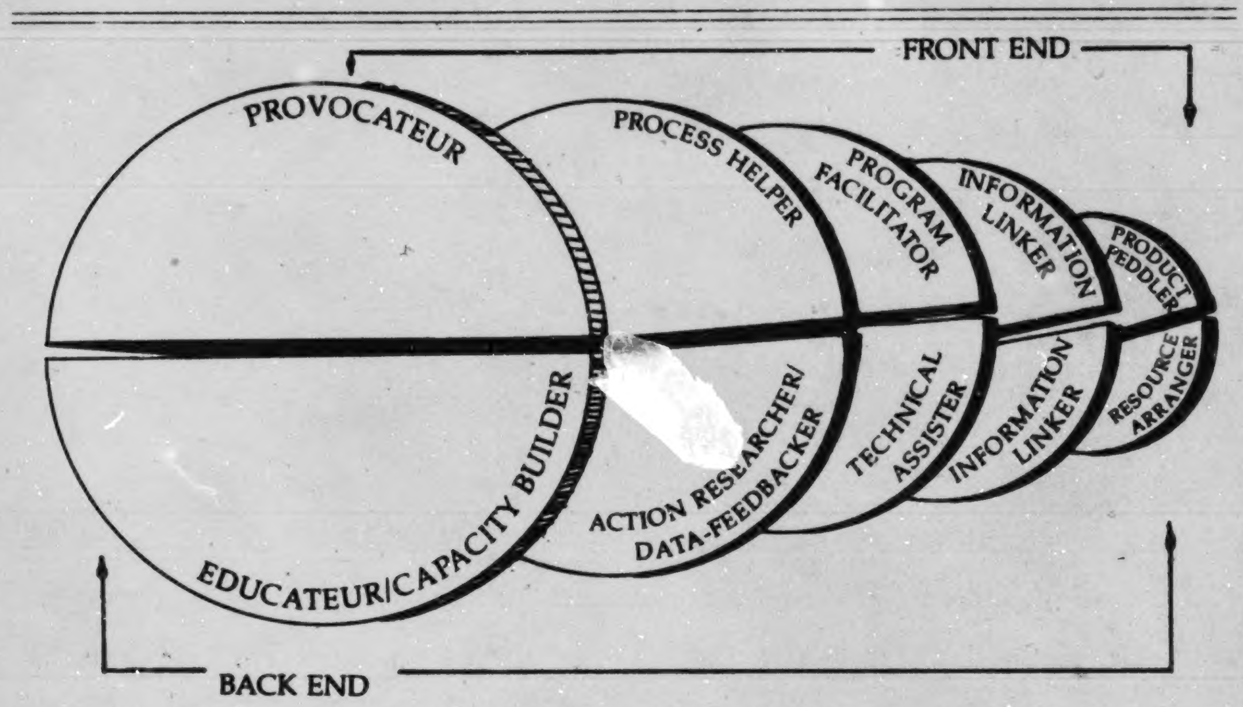
The five "back-end" roles are:

- Resource Arranger--e.g., provides resources, makes arrangements needed during implementation.
- Information Linker--e.g., mirrors the same front-end role.
- Technical Assister--e.g., content or process specialists or general problem-solving consultant.
- Action Researcher/Data Feedbacker--e.g., mirrors the process enabler front-end role; assists client in generalizing from current experiences to future situations.
- Educateur/Capacity Builder--e.g., roving systems improvement specialist; assists clients in establishing a capability or reserve to cope with future problems.

Figure 3 depicts Crandall's point that the ten roles constitute two fundamental subsets, and that each "front-end" role is mirrored by a "back-end" role. Single individuals can play multiple roles, including special blends of the roles. And if an agent plays a particular role on the "front-end," the agent is more likely to play a similar role in later phases of the relationship. Crandall's discussion includes comparisons of distinguishing features of each role and an analysis of prerequisite attributes of and the primary skill clusters associated with each role.

FIGURE 3

COMPLEMENTARY AND SYMMETRICAL LINKING AGENT ROLES



From Crandall, 1977, p. 231.

On first examination, the roles described by Crandall seem to be considerably removed from those described by Havelock, Piele, and Butler and Paisley. However, some reconciliation is possible. Crandall's distinction of "front-end" (pre-decision to adopt or change) and "back-end" (post decision) is an heuristic device. As Figure 3 depicts, the two sets of roles are seen by Crandall as mirror images of similar styles of linking agent behavior. However, the mirror pairs are not identical; the paired roles shift in character with respect to the phase of adoption/change. Since a larger number of phases can be identified than front-end/back-end, e.g., interest, awareness, evaluation, trial, implementation (Rogers, 1962) or the CBAM levels of use (0 non-use, I orientation, II preparation, III mechanical use, IVA routine, IVB refinement, V integration, and VI renewal; Hall et al., 1975) there is every reason to believe that finer distinctions among roles can be associated with particular client phases. For the purposes of task analysis, definition of personnel and training requirements, assessment, etc., these finer, phases-contingent role distinctions may be essential. Hence, we may discover that the Crandall role typology could produce perhaps as many as 25 (Rogers) or 35 (CBAM) different sub-roles if finer change phases are examined more carefully. Such finer distinctions should not obscure the fact that only five (not 10 or 35) basic roles are involved.

Are these five roles relatable to the Butler and Paisley schema? (See Figure 2.) The product peddler, resource arranger, and information linker roles are all variants of the "resource finder." The program facilitator/technical assister pair of roles is somewhere in the "solution giver" area of Figure 4. The process helper and action researcher/data-feedbacker roles are

## FIGURE 4

## COMPARISON OF LINKING AGENT ROLES

| HAVELOCK (In Eidell & Kitchell, 1968, 1969) | HAVELOCK (1973) | PIELE (1975) | BUTLER-PAISLEY (1978) | CRANDALL (1977) | |
|---|---|---|---|---|---|
| | | | | Front-End Roles | Back-End Roles |
| Conveyor | Resource Linker | Resource Finder | Resource Finder | Product Finder<br>Information Linker | Product Finder<br>Information Linker |
| Consultant<br>Leader | Process Helper | Process Helper | Process Helper | Process Enabler | Action Researcher/ Data Feedbacker |
| Trainer<br>Innovator | Solution Giver | Solution Giver | Solution Giver | Program Facilitator | Technical Assister |
| | Catalyst | | Generalist/ Scout | | |
| | "Whole Role" | | "Superlinker" | Provocateur | Educateur/ Capacity Builder |

obviously versions of the "process helper" modal role. However, the provocateur-doer and educateur/capacity builder roles are not easily placed because of their strong anti-status quo character, but they seem closest to the "superlinker" in their role requirements.

In Figure 4 we display a comparison of these several versions of linking agent roles.

If linking agentry (and therefore associated roles and functions) is dynamic and changing, if the roles and functions overlap, and if the roles and functions may be performed in a variety of combinations by a single agent, then the roles and functions as they have been described and defined are basic to linking agentry itself and are therefore generic.

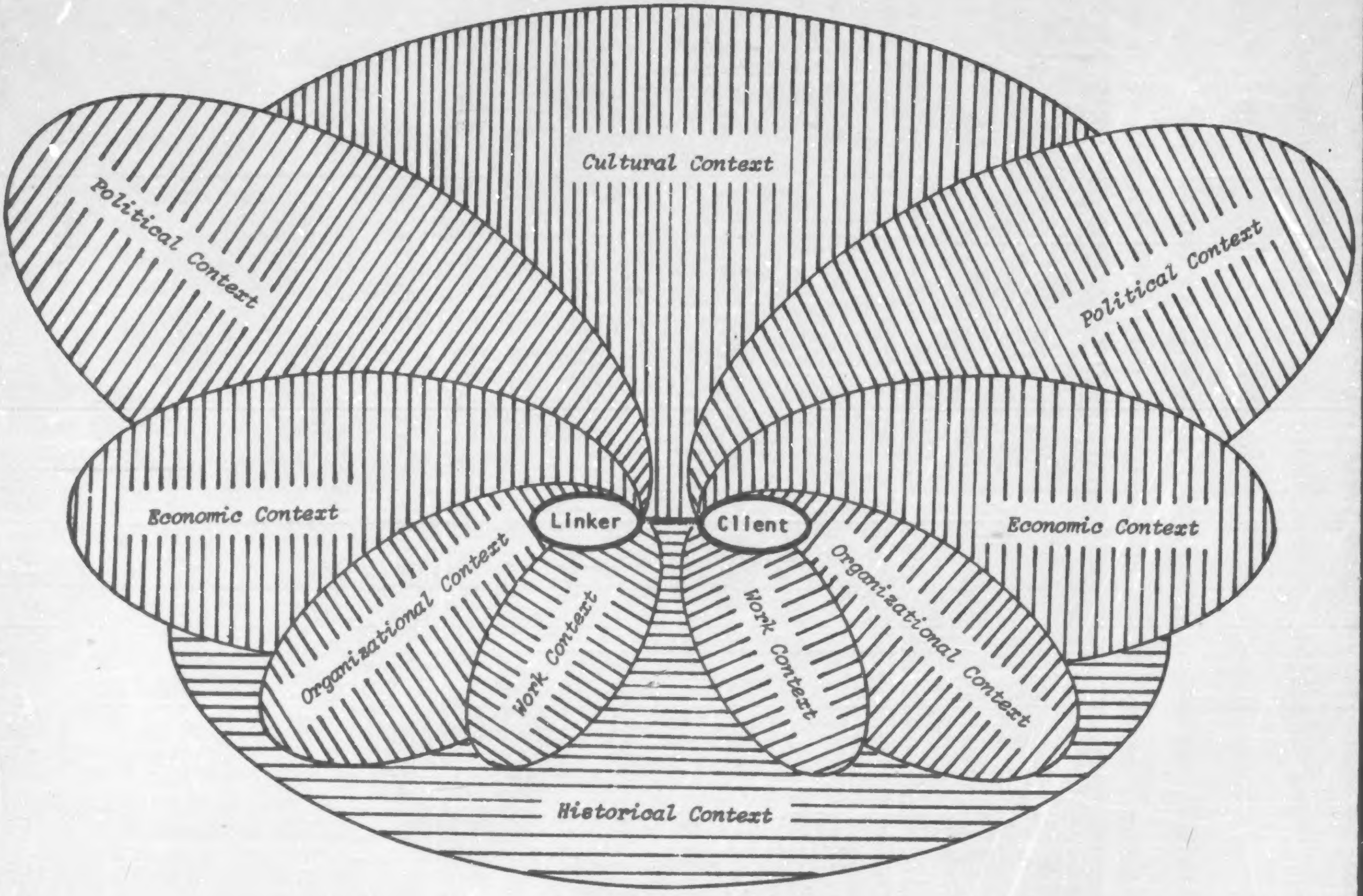
Descriptions from which these summaries are drawn are more concerned with the agent's idealized style of operation or mode of contact with the client than they are with the actual functions and activities performed. Hence, the term "modal roles" used by Butler and Paisley (or "archetypical" roles used by Crandall) can be applied to the roles and functions of Havelock and Crandall as well. Finally, discussions of these roles and functions are rarely associated with a specific context in which they are performed. The discussions give little if any indication of the factors that influence or change the character, cost effectiveness, support needs, and other aspects of linking agent performance. They tell us little or nothing about characteristics of the client organization, goals of the dissemination agency, amount of time a field agent can spend with a client, etc. In essence, such descriptions and definitions are global in their nature.

Similarly, discussions which point to the influence of contexts on various roles and functions also can be said to emphasize global and generic contexts rather than specific contextual factors which affect particular roles and functions or those system variables which influence change and improvement in schools. For example, Butler and Paisley remind us of the multiple contexts in which educational dissemination occurs: historical, political, economic, social, psychological, cultural, etc. They point out that such "contexts" are circumstances that differentiate settings in which educators work and in which dissemination takes place, and emphasize the far-reaching effects of context upon dissemination. In particular, they state that "ultimately it is the context of a program that determines its structure and function, its scope and duration, and its acceptance and utilization by clients. In addition to, or rather as a sequel to, an analysis of the services a dissemination program can best provide vis-a-vis it structure and function, an analysis of the program's relationship to its context helps to predict its effectiveness and to indicate aspects of the program in which the context is not accommodated."

They further indicate that different models of dissemination reflect different relationships among the various contexts and dissemination activities and thus require different depictions of the model. Figure 5 is their representation of multiple dissemination contexts in terms of interpersonal communication. Here the linker and client share common historical and cultural contexts but differ in the political, economic, organizational, and work contexts that impinge on them and consequently on the dissemination process in which they engage. Such depictions, though valuable as reminders of the influence of contexts, tend to represent archetypical cases rather then particular circumstances in which linking agents work.

## FIGURE 5

## MULTIPLE CONTEXTS OF CONTACTS BETWEEN LINKING AGENTS AND CLIENTS



From Butler and Paisley, 1978, p. 26.

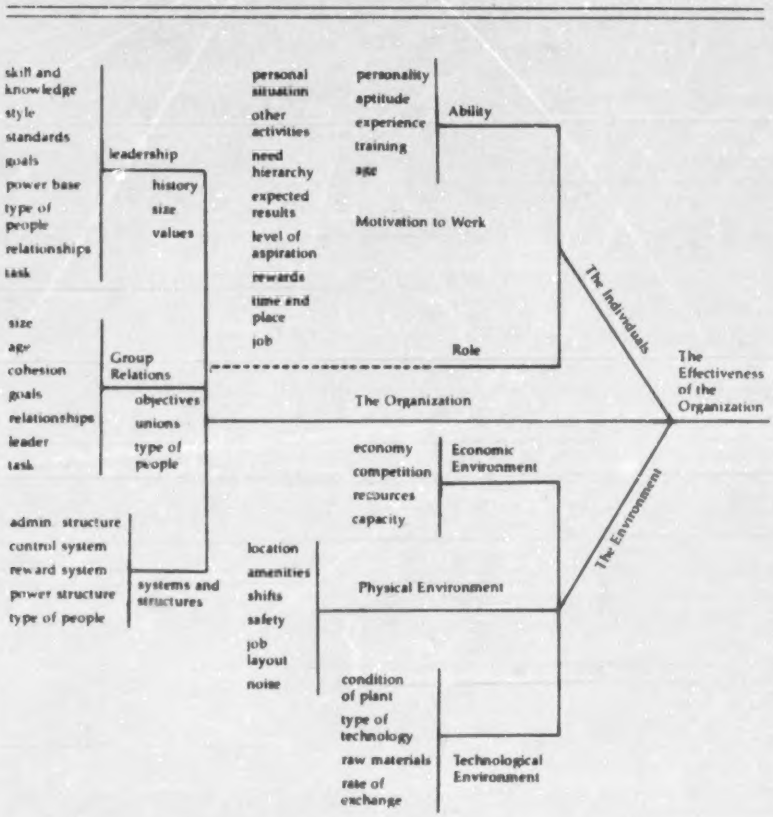
Crandall gives special attention to the "universe of the linking agent" in terms of the three systems or contexts in which the linker is most directly involved: the resource system, the client system, and the host agency (the linker's home system). In describing the resource system, he reviews the types of resources available to the linking agent, the sources of products and programs for the linking agents, and the attributes of innovations as they are perceived by the potential user. He concludes the review with this emphasis (p. 204):

> ...it should be obvious that a prime requirement for linking agents is not only greater understanding of the tangible resources which they will be called upon to bring to clients or themselves but also increased skills in comprehending and coping with the motivations, operating assumptions and preferred styles of interaction of those in the resource system. The simplistic view that an innovation is a textbook should be laid to rest. The linking agent's task as the intermediary playing a translation role relative to potential resources is vastly complicated by the multiple-innovation phenomenon. The factors noted above are but one part of the universe with which linking agents will interact, and these factors are in dynamic tension with the features of the client system itself...

The focus of his discussion of the client system is to illustrate the complexity of the school culture and to stress the need for linking agents to understand the many facets of the client systems with which they work. He stresses that knowledge of organizational dynamics is essential to effective management of planned change and cites Hardy (1976) in saying that the pay-off for such knowledge and understanding is "to substitute a coherent set of conceptual frameworks...for collections of assumptions." He continues with Hardy's illustrations (Figure 6) of the many and varied factors which must be taken into account in order to achieve organizational effectiveness and suggests that such illustrations provide (with a minimum of translation from organizations in general to schools in particular) a useful starting point for examining the interaction between the individuals and the immediate and surrounding environment.

FIGURE 6

SOME FACTORS AFFECTING ORGANIZATIONAL EFFECTIVENESS



From Hardy, 1976.

Crandall also considers agencies or organizations in which external linking agents will be housed as one of the influences on effective dissemination efforts. His major point is that most host agencies think of their function more in terms of their relationship with clients than in terms of their relationships with and expectations for the linking agents themselves. His contention is that the responsibility for providing an adequate support system for linkers must fall to the host agency (p. 213):

> Linking agents will invariably face ongoing problems of marginality (role-role distance) with both their clients and their colleagues. They may suffer from a sizable gap between their various professional roles or their concept of self. It is the host agency's responsibility to build in support mechanisms which lead to increasing role linkage, defined as a relatively small perceived gap between one's own role and that of others and of self.

Although discussions such as Butler and Paisley's and Crandall's accurately point to critical contextual factors, they can point only to what ought to be considered or remembered in planning, training, and actually linking. They do not provide the more specific information necessary for effective planning, training, and linking. The problems with both definitions and contexts are primarily problems with the level of specification and deriviation of educational goals and objectives and are similar to those discussed by Gagne (1975).

The relation of roles to personnel requirements and training objectives. In most of the analyses we have examined, the authors proceed directly from discussion of roles to discussions of prerequisite personal attributes or requisite competencies (knowledge, skills, sensitivities) for those roles.*

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* The Educational Information Consultant Program (Banathy, 1972) and the training program developed jointly by Stanford Institute for Communication Research and the System Development Corporation (Mick et al., 1973) are conspicuous exceptions where some explicit efforts were made to undertake task analyses; however, even in these cases the task analyses were more logical than empirical.

In virtually every case the derivations are primarily logical deductions, albeit often based on general observations and sometimes on personal experience in the role. However, virtually all the derivations are technically incomplete and few if any are grounded in systematic observations of the job performance or empirical task analysis.

Gagne distinguishes between two major lines of derivation which he labels societal and educational, and nine levels ranging from national goals to instructional objectives. One of Gagne's points is that each line of derivation tends to skip a level; the societal derivation typically skips the level concerned with human functions (e.g., social communication) and the educational derivation typically omits the level concerned with manpower statistics relating to the relative number of jobs and roles required. Figure 6 depicts the nine levels and the level skipped by the two lines of derivation.

In a previous attempt to construct a competence-based program for educational R&D personnel, the Far West Consortium for DD&E Training had to face the problem of how first to derive and then to assess the competencies on which the program was based (Hood and Blackwell, 1975). In reviewing the data bases for educational R&D personnel related to this problem, Hood (1974) found that both of Gagne's predictions about omissions were true and that they do have practical implications for the derivation of competencies. A preliminary comparison of the previous review with available knowledge about linking roles and functions suggests that previous conclusions can also be related to the derivations of roles and functions of linking agents.

Briefly, our conclusions are these: Level 1 (National Goals or Man-in-Society Goals) and Level 2 (Society System Goals or Life Segment Goals) typically have been ignored or assumed in the derivation of educational linking

## FIGURE 7

## LEVELS OF SPECIFICITY IN THE DERIVATION OF EDUCATIONAL GOALS AND OBJECTIVES

| | SOURCE OF DERIVATION | |
|---|---|---|
| Level | Societal | Educational |
| 1 | National Goals<br>*Example: Improve standard of living* | Man-in-Society Goals<br>*Example: Lead a happy and useful life* |
| 2 | Social System Goals<br>*Example: A system of health care* | Life Segment Goals<br>*Example: Worthy use of leisure* |
| 3 | Manpower Goals<br>*Example: Teacher* | (Roles and Jobs) |
| 4 | (Human Functions) | Human Functions<br>*Example: Social communication* |
| 5 | Human Activities<br>*Example: Repairing electric motors* | Human Activities<br>*Example: Following directions in completing an application* |
| 6 | Curriculum Goals<br>*Example: Typing* | Curriculum Goals<br>*Example: Social Studies* |
| 7 | Human Capability Categories<br>*Example: Intellectual skills* | |
| 8 | Broad Objectives<br>*Example: Knowledge of the origins of World War I* | |
| 9 | Instructional Objectives<br>*Example: Constructs a sentence with a dependent clause* | |

From Gagne, 1975.

agent goals and objectives. And, at least until recently, derivations have not dealt with Level 3 (Manpower Goals), with the consequences Gagne identifies, namely, that the numbers of jobs or roles are not considered. Currently we have quite imprecise information on which to base quantitative estimates of personnel requirements.

Although we lack estimates of numbers, it is at this conceptual level that we find the typical entry points for logical derivations. Most analyses are based on generic conceptions of roles. Very few are based on jobs or positions.

Level 4, Human Functions, has been largely ignored in the social derivations, with the result that the general functioning of linking agent professionals as persons in society or even as members of a work team have been given little consideration.

Level 5, Human Activities (e.g., following directions in completing applications), appears to be the typical entry point in recent efforts to define requirements by analysis of observation, or by questionnaire or interview data. These data, if they exist at all in any systematic form, are almost always based on small samples of persons and are often confined to particular educational D&U programs and client contexts. From these data, we may in turn derive curriculum goals, human capability categories, broad objectives, and finally, instructional objectives. But by the time we have descended to these lower and more specific levels, we discover that our contacts with the data base are quite tenuous.

Summary. The concept of the linking agent is recent (Lippitt, 1965). Although action research, group dynamics, and planned change are ideas that have been around for several decades, the active interest in linkage (as a form of dissemination) between educational R&D and educational practitioners can be traced specifically to Havelock (1968-69). The Pilot State Dissemination Program (1970-1973) possibly represents the first intentional national effort to place full-time educational linking agents in the field (serving school personnel in Oregon, South Carolina, and Utah).* Aside from a few isolated case studies, the Sieber, Louis, and Metzger (1974) "Evaluation of the Pilot State Dissemination Program" represents perhaps the first systematic empirical analysis of roles and positions (three project directors, 12 information specialists, and seven field agents). Other empirical studies by Emrick, Peterson, and Agarwala-Rogers (1977) of the National Diffusion Network, by the Center for New Schools (Moore et al., 1977), of Technical Assistance Groups, and by Blackwell, Hood, and Pool (1978) of the Research and Development Utilization Program are all so recent that their implications for linking agentry are still being examined (see Emrick and Peterson, 1978, for one recent synthesis). In the absence of substantial accessible data, most conceptions of educational linking agents have been prescriptive and logical rather than descriptive and empirical. Havelock's image of three modal roles (resource linker, process helper, and solution giver) has exerted a substantial influence on subsequent thinking, first through Piele's review and analysis, which included efforts to identify training programs corresponding to these three modal roles, and then more recently through the Butler and Paisley exposition of linking agent "entitlements" and their conception of areas of specialization. Crandall's conceptualization has pushed these synthetic idealizations slightly more toward reality by identifying and describing a variety of roles that he believes can be found among current educational dissemination efforts. As we have demonstrated, Crandall's roles can be mapped onto the Butler and Paisley role specialty "triangle." Hence, at an analytic level there appears to be no contradiction. However, nearly all our knowledge is based on idealized conceptual frameworks and derivations that are very tenuously grounded in observational data. Systematic inquiry into the real world and work of various kinds of educational linking agents has barely begun and is acutely needed in order to verify or correct the derivations of job and task descriptions, personnel requirements, training objectives, etc., which are now based primarily on ungrounded theorizing and conjecture.

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* Obviously many persons (such as librarians, curriculum consultants, supervisors of instruction, SEA staff consultants) have performed linking functions for many years, but few of these persons play full-time roles as linkers.

## VI. AN ALTERNATIVE APPROACH TO CONCEPTUAL DEVELOPMENT

The contention here is that we may expect increasing differentiation of the concept of the linking agent, along with more detailed examples of different kinds of agents that are based on real cases. We anticipate that the archetypical modal roles (i.e., resource finder, process helper, solution giver) will continue to be "found" in various combinations as these examples and case studies of real linking agents are examined. This will be true simply because these modal roles are something like the primary colors that may be mixed in various combinations to produce any desired color. However, it is the very generality of these modal roles that limits their value for designing specific linking jobs, for selecting and training people to fill them, for providing appropriate professional and technical aids, or for supervising and assessing performance.

In our opinion there is a fundamental problem in the discrepancy between much of the current conceptualization of linkage functions and linking agents and specific practical needs with respect to the selection, assignment, training, support, supervision, and evaluation of educational linking agents. Stated simply, we really don't know very much about the real jobs and performances of linking agents. Consequently, we tend to think and to communicate with relatively general and undifferentiated concepts. As we attempted to illustrate in Chapters II and III, many different orientations can be adopted; there are also a sizable number of systematic models. These different orientations and different models imply many significantly different assumptions and approaches for the change/linking agent.

At a highly abstract and generalized level of conceptualization, the role typologies (and their derivative descriptions of requisites for knowledge, skills, and personal attributes) provide a good point of departure, but they simply don't take us far enough in dealing with reality, whether it be from the standpoint of the linking agent, project manager, federal sponsor, trainer, evaluator, or policy analyst.

Because the linking agent tends to be a leader or manager, and because the educational linking agent operates within organizational contexts, we have looked to relevant research and theory in the fields of leadership, management, and organizations. There we have found the emergence of situational and contingency theories (e.g., Hemphill, 1954; Fiedler, 1967; Stogdill, 1974) developed to cope with the many contextual factors that interact with one another to affect or condition the behavior of leaders and managers. Because of the diversity of types of organizations (including educational settings) in which these situational or contingency effects have been found, it seems likely that a contingency theory of educational linking agentry will eventually emerge simply because it will accomplish two things: first, it will make better sense out of otherwise inconsistent research and evaluation findings; and second, it will provide practical guidance to planners and managers who need to resolve discrepancies between plans and results or who need to strengthen or refine their D&U operations.*

The conceptual machinery for a contingency theory of educational linkage already exists. Rogers (1962), Havelock (1969), Davis (1971), Hull et al. (1973), National Science Foundation (1973), Zaltman, Duncan, and Holbeck (1973),

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* In general, experienced linking agents already know that they live in a world of contingencies. Most of them have learned their trade on the job and have little or no relevant formal training and only a smattering of knowledge with respect to change theories. Eventually, a contingency theory may be refined to where it might provide them with a superior operational guide to their "gut feelings." However, a more probable beneficiary is the inexperienced linking agent who may find it to have heuristic value.

Havelock (1974), Rothman (1974), and Zaltman, Florio, and Sikorski (1977) have each offered or developed formulations of change factors, innovation attributes, and personal and organizational factors.* In a few instances (e.g., Berman and Pauly, 1975; Berman and McLaughlin, 1975; and Emrick, Peterson, and Agarwala-Rogers, 1977), we have begun to acquire objective data based on relatively large samples of school settings that permit analysis of the configurations of these many change variables. These multi-factoral, multi-dimensional views of educational change as it really occurs stand in stark contrast to earlier theoretical images of a few well-defined, general linker roles. These later empirical views point out the complex interaction of many determinants bearing on the effective performance of the educational linking agent.

The logical extension of emphasis on the importance of understanding the influence of contextual factors on linking roles and functions and on the effectiveness of linking agent behavior should lead to a careful examination of Gagne's Level 5, Human Activities, within particular jobs performed by linking agents in specified organizational contexts. We argue that only by analyzing the occupational activities of linking agents' jobs and by identifying the interactions between the generic/modal/global roles and specific contextual factors can we begin to describe reliably the roles and functions most crucial to program improvement and to specify requirements for effective programs, or estimate costs or effects of what will occur when linking help is offered. Further, we argue that occupational analysis is the approach that should be undertaken as the next step toward reconciling previous conceptualizations and the multiple realities in which dissemination occurs.

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* The multi-dimensional aspect of the educational linkage process is a major theme throughout the NIE-sponsored papers produced by Piele (1975); Crandall, Culbertson, Lieberman, Lipham, and Paul (in Nash and Culbertson, 1977); and Butler and Paisley (1978).

Although occupational analysis is frequently described in terms of instructional systems development, Legere (1978, pp. 27-35) has pointed out that such analysis "must be performed as a true research effort to determine the actual content and form of job behavior, and it must serve as base information for modifying all aspects related to the job." He describes occupational analysis as (p.28):

> ...a system or procedures used to verify the existence of particular jobs in an occupational field; define those jobs within the context of the field; observe the performance of the job holders; record details of that performance in behavioral terms; arrange these data in meaningful form; make comparative analyses of the collected information against other factors known about the job; and assist in making management decisions related to the occupational field being studied.

Included among the management decisions related to the occupational field being studied are personnel actions such as selection and assignment, career development concerns, equipment development and provision, logistical support, program and project development and/or revision, as well as training. If the decisions are directed toward providing effective linking services, then one basis for such decisions should be a thorough understanding of the job(s) through which the services are provided. Similarly, if training is intended to improve job performance and if the trainee is to be judged by how well s/he behaves on the job, the training program should begin with the job.

Although a variety of systems of occupational analysis exist, all share the same intent: "to gather details of job performance in order to understand what the requirements are for performance of that job." Likewise, all are behavioral in nature, although they differ in depth of detail of data gathered and methods of data collection, storage, and retrieval. Most also usually consider conditions or factors which affect job behavior, i.e., what support is or is not given the performer. Where training systems are a central concern of the analysis, criteria for acceptable job performance must also be considered in depth. Legere contends that performance criteria should be an integral part of the system and included in the initial procedures.

One variable across different systems of occupational analysis is construction or architecture of the job data. Each system has a similar general structure which reflects the hierarchical nature of the various aspects of the job, but different systems apply different labels to those aspects. Here, the terms used to describe the construction of jobs are job or occupational role, function, task, and activity.* Figure 8 (see following page) depicts the relationship of the four aspects of the hierarchy.

A job role is the total set of functions performed by the person filling the job position. Functions are the major subdivisions within the job role. Each function is composed of work-related performances which can be observed with reasonable frequency in the job performance. Functions are broken into tasks, and tasks are related to functions as functions are to roles. Similarly, tasks are broken down into activities, and perhaps subactivities. Activities are composed of procedural steps which can be aggregated into activity and task performance. Task performances are usually identified by services or products of a function. For example, all the activities involved in conducting a computer search would be aggregated into that task. That task, conduct computer searches, would be aggregated with other types of information searches into the function, locate resources. The function would be aggregated

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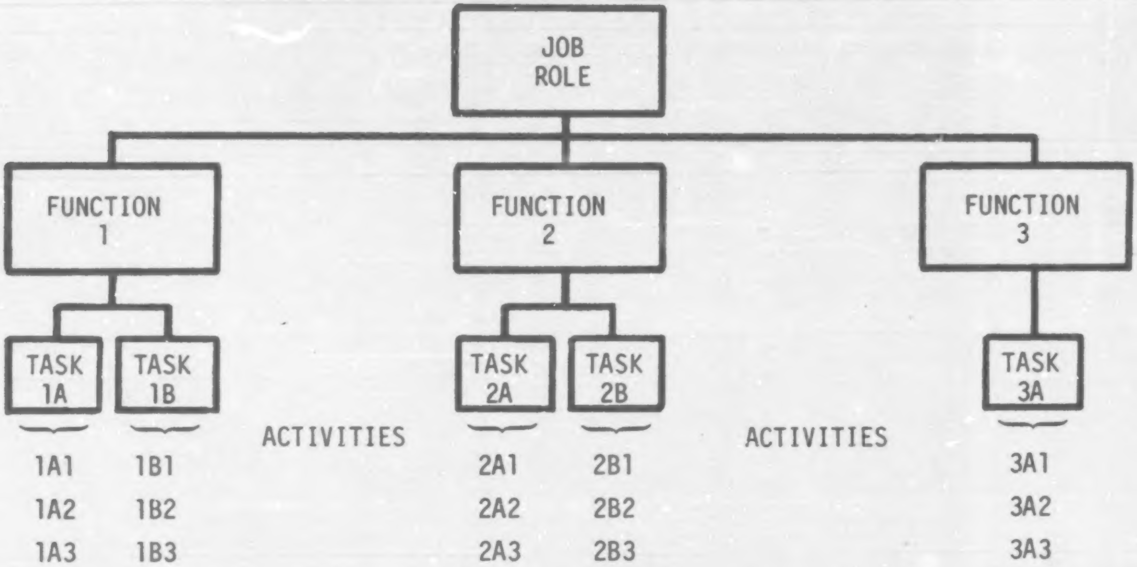
* References to previous discussions of conceptual roles and functions are distinguished by the terms generic or modal roles roles/functions.

FIGURE 8

RELATIONSHIP OF ROLES, FUNCTIONS, TASKS, AND ACTIVITIES



Adapted from Legere, p. 31.

with other functions (such as interpreting information, transmitting information to users) to compose the job role of user services specialist in an information center. It is important to note here that an understanding of all aspects of a job role will indicate the critical functions of a job. And it is the collection of all the functions that tell what a job role really is.

From an understanding of the job roles and function can come identification of the skills and attributes necessary for effective job performance. As Crandall points out, "once we have a bead on the particular job of a given linking agent, we can then be more precise in delineating the skills needed to execute the job and in assessing the extent to which they are present or need to be developed.." In considering the utility of occupational analysis in delineation and assessment, it is also useful to emphasize Crandall's distinctions between selection and training and between education and training (pp. 229-232):

> Each of the [front-end/back-end or generic] roles described... requires a mix of skills, many of which will be possessed by potential linking agents and therefore will become the foci of training programs for them. Additionally, it is worth stressing that the roles are not for everyone. Matching the potential linker to the requirements of the job is every bit as crucial as the need to match the proposed program to the client's needs and requirements. Selecting linking agents is not simple, whether an agency is choosing from among already existing staff or whether it is hiring new staff from the outside. Half the battle is won or lost at the point of initial selection.
>
> It is also worth distinguishing between education and training. Stated most simply, the distinction is that training is job-specific while education is person-specific. In this context, the preceding sections have addressed components of the universe within which the linking agent will work and suggested a need for extensive and ongoing understanding of these classes of entities and their dynamic interrelationships. Much of this knowledge should be the subject of an ongoing educational effort initiated for or by linking agents. But many of these topics are ones in which any highly competent educational professional desires a thorough grounding. As such, they are the proper

> focus of education for the individual and are not exclusively related to the requirements of a particular linking agent job or role.
>
> With respect to job-specific training, it is necessary first to determine the particular roles one desires to take or recruit for, to assess existing skill levels, and then to design and implement a training program to fill in whatever gaps exist in an individual's repertoire of skills. Training, then, is concerned primarily with skill development, though most training designs will also incorporate segments which are of a general educational nature.

The contention here is that occupational analysis information could provide the basis for sophisticated discrimination between the various skill levels required for particular job roles and functions and for specifying and determining the relative importance of skill clusters for various occupational roles.* Such information could also assist in distinguishing among the types of support (in the broad sense) necessary for program improvement. For example, when selection and training are thought of as supports for effective job performance and program improvement, other approriate distinctions can be made among selection, assignment, training, education, supervision, and job aids required for effective work performance. Thus far, little attention has been given to this wider range of supports.**

In spite of the marginal character of the linking agent and the emergent nature of the field itself, occupational analysis of linking jobs need not begin in a vacuum. In a project for NIE, Butler, Paisley, et al. (1975) catalogued more than 40 "models" of educational linkage, as contrasted on these dimensions:

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* Crandall (p. 256) has suggested the relative importance of technical skill clusters for the front- and back-end roles he describes. However, these have not been related to occupational roles nor have required skill levels been suggested.

** Emrick (1978, pp. 56-60) has pointed out the need to consider provision of job aids. However, there has been no discussion of the relative merits or application of these supports as they relate to linking roles and functions.

LEVEL: National, state, regional, local

BASE: Government-centralized, government-decentralized, professional association, university, private-for-profit, private-nonprofit, consortium

SERVICE: Technical assistance, instructional materials, continuing education, information

FOCUS: General, subject-specific, product-specific, audience-specific

INTERFACE: Print, media, human

INITIATIVE: Client (demand services), staff (scheduled services)

The following 10 roles (all of which involve direct contact between job performer and client) were found in one or more of the 40 linkage models (Butler and Paisley, 1978, pp. 2-3):

1. ROLE: user services specialists in clearinghouse or information center.
   FUNCTIONS: receive and interpret user requests, locate resources, conduct computer searches, prepare responses to requests, transmit responses to users.

2. ROLE: staff member in teacher center.
   FUNCTIONS: work with individual teachers and groups of teachers to define classroom problems and develop new approaches to teaching using primarily local resources, prepare exemplary instructional materials and classroom learning centers, conduct workshops on topics outside the usual scope of inservice training.

3. ROLE: professor of education.
   FUNCTIONS: provide college-based inservice training.

4. ROLE: technical assistance specialist in regional laboratory.
   FUNCTIONS: respond to requests from product adopters to provide assistance in product installation, user training, evaluation of product effectiveness, etc.

5. ROLE: staff member in regional office of U.S. Office of Education.
   FUNCTIONS (among others): answer educators' questions about USOE programs, supply documentation on programs, provide some technical assistance in the preparation of proposals to USOE.

6. ROLE: organizational development specialist in private (for-profit or nonprofit) companies.
   FUNCTIONS: under contract to school district, conduct assessment or organizational process and performance, assist in clarifying

organizational goals, identify organizational resources and constraints, provide formal and informal training to members of the organization.

7. ROLE: curriculum specialist/consultant in state department of education.
FUNCTIONS (among others): explain to individuals and committees in school districts the applicable state regulations and guidelines, assist in diagnosing local needs and matching alternative instructional materials or approaches to those needs, provide information on sources of supplementary funding for subject area.

8. ROLE: staff member of the Product Inquiry Service, Educational Products Information Exchange.
FUNCTIONS: respond to product-related questions from school districts and other institutions subscribing to the EPIE program, amplify or interpret information provided in the EPIE publication, Educational Product Report.

9. ROLE: pre-session presenter at the annual conventions of the American Educational Research Association, American Psychological Association, etc.
FUNCTIONS: conduct brief intensive workshop/tutorial training sessions on topics such as educational evaluation.

10. ROLE: staff member in large city school district research office.
FUNCTIONS (among others): assist schools in the district to maintain program effectiveness through assessment and diagnosis of student needs, inform schools of new materials and research findings that are relevant to needs.

In addition to this sample of direct-contact job roles, there are external linking agent roles involved in federally-sponsored dissemination programs such as the National Diffusion Network, the Research and Development Utilization Program, the State Capacity Building Program, and the Research and Development Exchange.

All these job roles provide a starting point for occupational analysis of linking roles and functions. The variety of these jobs and the conditions within their host agencies and client systems can provide realistic descriptions of both the job roles themselves and the conditions/contexts which influence the performance of those roles. Logically, comparative analysis of the variety of occupational roles and functions can identify the job roles and functions most crucial to program improvement. Comparative analysis of the conditions in which these roles and functions are performed can provide information on which to establish the cost effectiveness of existing and projected programs. Occupational roles and functions, can, in turn, be compared with the generic roles and functions in order to confirm or revise the conceptual models on which programs are based.

## VII. IMPLICATIONS FOR LINKER TRAINING AND SUPPORT SYSTEMS

It is our observation that currently a vast gulf lies between theory and practice with respect to educational linkage. Havelock and Lingwood (1973) have provided us with a comprehensive and complex image of linkage systems and functions, and with a general conceptualization of the roles and functions of linking agents as a substantial initial basis. Subsequent works (e.g., Piele, Nash and Culbertson, Butler and Paisley) have provided elaborations and refinements. With respect to training and support, Crandall provides a carefully considered and relatively complete overview of issues and options. He provides no "blueprints," but his final advice deserves careful attention:

> For those concerned with recruiting and selecting linking agents, attention should be focused first on developing a _tailored_ set of prerequisite attributes. These can then be related to selected technical skill clusters chosen for their _relevance_ to _particular_ linking agent roles...
>
> For those concerned with skill development itself, attention should be directed to acquiring a _thorough grasp_ of the available resources for those skill clusters that are _pertinent to the given situation_ and designing training programs which build upon them (Crandall, 1977, pp. 264-265, emphasis added).

Up to now, most of our conceptions about linking agent roles, functions, and training and support needs have been based on _a priori_ assumptions. Only a few trainers have bothered to observe linking agents on a day-to-day basis or to inquire deeply into the conditions of their work and their real problems and needs. Consequently, most of our linker training programs and support systems have been based on logical analysis and general assumptions about what would or should be needed, often with little or no consideration given to the entry-level values, understandings, and competencies of the types of persons that would be recruited to fill these positions, and frequently with only a general understanding of actual task demands and critical problems linking agents would actually encounter. Very few, if any, programs have been tailored to specific situations and then maintained, with appropriate evaluation and follow-up, over a period sufficient to determine their worth or to refine them into programs that are both efficient and effective in dealing with critical training needs.*

Review or evaluation of actual programs of instruction for linking agents leaves us with the impression that many programs probably succeed in imparting only "orientation" or "familiarization" levels of competence; that is, they impart (sometimes very effectively) general awareness and understanding, and perhaps have also exposed the trainee to limited practice in performing the sometimes complex intellectual or interpersonal skills that may be involved. However, relatively few programs provide for extensive practice, with appropriate feedback, in a variety of task contexts that have been selected or tailored to afford high transfer to the on-the-job situations that linking agents will actually encounter.**

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* The term "training needs" as used here refers to specific discrepancies between the actual levels of competence of linking agent trainees before training and the levels of competence that are required to perform effectively in specified relevant job settings.

**This situation is due to one or more and often all of the following reasons. First, training program design is rarely based on job and task analyses of real linking agent jobs similar to those the trainee will fill. Second, the training designer often seriously underestimates the amount of practice and feedback that will be required. Third, immediate evaluation is often confined to "affective" reports and cognitive tests that provide little reliable information concerning attained skill levels. Fourth, follow-up evaluations of training are rarely undertaken and, when they are, are usually based solely on questionnaires that neither ask about nor are capable of pinpointing specific deficiencies. Finally, many trainers have made such an investment in developing particular sets of training materials and exercises that they are not fully open to information that would suggest that they were either inappropriate or ineffective.

Consequently, few training programs are really "on target" in terms of imparting competencies linking agents actually will need to carry out their day-to-day jobs more efficiently and effectively. Training programs tend to miss either by failing to deal with critical job-related content needs or by failing to impart sufficiently high levels of competence to deal effectively with actual tasks and problems.*

However, there appears to be an even more serious contextual problem. Generally, linking agents lack the time and the resource to obtain needed training, even if it were pertinent and effective. Currently, the great majority of education linking agents are employed by short-term projects that often exist on a year-to-year funding basis. There is no significant pool of trained linkers ready to step into new jobs. Hence, most projects make do with whomever they can find. Neither the project proposal writer nor the project sponsor tends to give high priority to training, scheduling appropriate blocks of time to accomplish it, or allocating significant funds to support it. Finally, the needs to begin promptly to accomplish project objectives and to deal quickly with pressing client demands become so urgent that training time is invariably difficult to schedule. The reality is that project managers must place major emphasis on selection, assignment, and initial job orientations, and then count heavily on on-the-job training (which often means only to learn on one's own while working) to try to make up the difference.* Formal training, if any, is often confined to a few days a year. If the training received on these rare occasions is not seen as relevant, then the linking agents themselves are less likely to seek additional training opportunities or to request the time and funds that may be required.

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* The reader should not confuse training programs with the specific training materials, exercises, etc., that may be used in the program. Piele (1975), Crandall (1977), and the Cooperative Project Sourcebook (1976) amply demonstrate that appropriate, well-developed, and well-evaluated materials exist for at least some content areas. This is not the point. Rather, it is how these materials are selected, organized, and adapted to fit specific needs of particular trainees who may lack only some competencies to perform in particular job settings.

These conditions may be only temporary, being largely due to the newness and _ad hoc_ character of most educational dissemination efforts. But the problems of attempting to accomplish complex linkage functions with unskilled personnel are currently very real, and there seems no indication that positive changes will occur in the near future. The cost to programs and projects and to their sponsors stems from inefficiency and from significant shortfalls in attaining desired objectives. The cost to clients is that they are served less well than they might be. But perhaps the greatest cost is to the linking agents themselves who often must make up, through ingenuity, hard work, and enormous persistence, for the competencies they lack or for the support they need but fail to receive.

In our opinion, these problems are systemic. Development of more training materials and programs, or delivery of more training opportunities, or even provision of more time and funds to support the training of linking agents will not, by themselves, solve the personnel competence problem. Part of this problem lies in the fact that the entire educational linkage enterprise is simply too recent, too ambitious, too fragmented, and too marginal (in terms of priorities and support) to have developed an adequate basis for understanding operational personnel requirements and for developing adequate selection, assignment, training, and support methods to meet these personnel requirements. This foundation will not be developed quickly, easily, or inexpensively, because the goals of educational linkage, although highly ambitious, are not yet well-defined; the conceptual and operational problems confronting educational linkage are immensely complex; the pertinent knowledge basis and deployable technology are generally recent, unevenly developed and documented, and not easily accessible and organized with respect to specific problems; the available financial resources are grossly insufficient relative to aspirations and objectives; and little "system slack" exists to deal more directly and systematically with longer-range personnel and training problems.

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* Crandall (1977, p. 229, emphasis added) notes: "Matching the potential linker to the requirements of the job is every bit as crucial as the need to match the proposed program to the client's needs and requirements. Selecting linking agents is not simple, whether an agency is choosing from among already existing staff or whether it is hiring new staff from the outside. _Half the battle is won or lost at the point of initial selection_."

Although these conclusions hold generally, it is extremely important to note that the problems are far less severe in some areas than in others.

The descriptions and analyses by Piele, Crandall, and Butler and Paisley are remarkably consistent in their conclusions regarding the relative ease/difficulty among the modal linking agent roles. From these analyses we derive the conslusion that, with respect to (a) specification of performance requirements, (b) availability of appropriate training resources, and (c) our ability to impart reliably and inexpensively the requisite linking agent job competencies, the major modal roles would be rank-ordered from easiest to most difficult as follows: resource finder, process helper, solution giver, and complete (or super-) linker. Crandall's versions of the resource finder--the Product Peddler, the Resource Arranger, and the Information Linker-- have been around for as long as there have been educational materials salespersons, reference librarians, and instructional materials centers. Marketing research and practice, information science and technology, and instructional technology have all contributed to the extensive knowledge and experience bases that support the resource finder. Butler and Paisley note that resource finding is at the lowest level of "entitlement," and Crandall indicates that the prerequisite attributes and technical skills are, relatively, the least demanding. Because many clients must be served by each agent playing a resource finding role, and because that linking agent's performance is more easily observed by supervisors, and because there is often a "paper trail" that permits analysis of performance, training and supervision are easier, feedback and corrective action can be easily provided, and client service routines can be developed, evaluated, and refined.

Process helping roles are significantly more demanding than resource finding. Because the processes involved may be technical (e.g., facilitating problem analysis and decision-making), interpersonal (e.g., facilitating group interaction, managing conflict, supporting a crisis intervention), organizational (e.g., helping to develop new structures or procedures), or all of these, the range of roles and tasks confronted by process helpers is much more diverse and more difficult to specify. Process-helping practioners may have been trained in and be proponents of particular process approaches (e.g., group dynamics, organizational development, social psychiatry). Most of these approaches are relatively new and highly dynamic in their evolution of content and method. Although specific methods can be taught in a moderate period of time, extensive amounts of supervised practice are usually required to achieve the necessary skills of a professional process helper. The services of a process helper are usually expensive and the results are relatively unpredictable.

Piele notes that the role of solution giver is more elusive than the previous two roles: "If the agent is actively involved in needs diagnosis and adoption decisions, plays a solution-giving role there, and subsequently directs the implementation of that solution, the range of linking skills that agent will need may be quite imposing." Crandall's discrimination of "front-end" roles (e.g., Program Facilitator) and "back-end" roles (e.g., Technical Assister) suggests that there can be some simplification by specialization. Although a few graduate training programs may aspire to prepare persons to play this type of role, most current practitioners are self-made and self-trained. We have virtually no adequate documentation on this role, and if there is a coherent knowledge base that is actually used to support this role, it probably resides primarily in the heads of current role practitioners.

As far as we are concerned, the "superlinker" role is a theoretical construct. Its basis in education may be traced to Havelock's magnificent conception of a "whole role." Butler and Paisley deem it possible that a linking agent might play all roles competently. Crandall spells out his view of the broad array of understandings and skills involved as follows:

- A sense of history about the field of dissemination and educational program improvement.
- Knowledge of past, current, and emerging federal and state programs concerned with these topics.
- Knowledge of the literature of planned change, behavioral science, and curriculum theory.
- Knowledge of and access to sources of programs, products, and information.
- Understanding of the quality control issues, ethical issues, and value issues inherent in such work.
- Understanding the many facets of an innovation as perceived by potential clients.
- Awareness of oneself as an innovation.

- Developing and using a systematic view of the client system.
- Developing and refining a knowledge of organizational dynamics, especially those peculiar to schools.
- Developing an understanding of, and skills in managing, the "mutual adaptation" process.
- Developing skills in diagnosing various aspects of organizations.
- Developing means of assessing and promoting the growth of the clients with whom they work.
- Fostering the development of a collaborative climate within which to work and be housed.
- Employing data collection and feedback procedures to guide an effort and to elevate the level of discourse.
- Developing a consciousness as to the presence and relevance of various personal and intrapersonal attributes of oneself and others.
- Developing mechanisms for clarifying, negotating, and renegotiating one's own role(s).
- Securing and refining a range of technical skills appropriate to one's role.
- Developing and effectively using a range of formal and informal support mechanisms.
- STAYING ALIVE!

This conception of the complete linking agent or superlinker is a worthy goal toward which we may strive. But until there is a well-established, permanent profession, it will remain a heroic role achieved by only a few fortunates who have managed to achieve the breadth and depth of requisite training and experience and who have stayed alive and committed.

If the superlinker is currently an "impossible dream" for most educational linking agents, Butler and Paisley have pointed the way toward a more realistic and realizable alternative, namely the articulation of roles through differentiation of functions (1978, pp. 42-43; 1973, vol. I). We agree with them that specialization, including "generalist" roles, part-time roles, and many specialist roles offer a more probable direction for future development. If this aspiration is to be accomplished efficiently, we need much more field-based, reality-oriented, intensive study of existing linking agents, their clients, and the various embryonic linking agencies and systems. This should be accompanied by more imaginative and systematic efforts to plan, develop, and test promising combinations of dissemination and utilization support and incentive systems, knowledge products and process tools, and resource and communication multipliers that may significantly alter the roles and amplify the effects of linking agents. Disciplined inquiry can and must be applied. Contextual factors, social and economic costs, and client and other outcomes must be considered. Without study of existing operations, and without deliberate, careful experimentation and evaluation of promising combinations of change factors (clients, problems, incentives, resources, agent roles, strategies, etc.), linkage will remain "chancy" and highly individual art that will generally be too expensive and unproductive to deserve widespread support and respect except in its least expensive and technically most mature forms.

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